FEBRUARY
1961
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35¢

AMERICAN Cinematographer

The Magazine of Motion Picture Photography

•Filming "Exodus" in Super-Panavision

•What is Color

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AMERICAN

Cinematographer

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OH THE COVER

THE LOCKHEED Motion Picture Unit (Burbank, Calif.) prepares to shoot a scene for an F-104 Indoctrination film on the flight line of company's Palmdale, Calif. plant. The aero stand, readily available throughout the plant, makes an excellent camera parallel. Standard sun reSectors are used here to smooth out unwanted shadows.

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ASC — hallmark of superior cinematography

AMERICAN SOCIETY OF CINEMATOGRAPHERS

FOUNDED January 3, 1919, the ASC was established to advance the art and the science of cinematography; to encourage, foster, and strive for preeminence, excellence, artistic perfection and scientific knowledge in all matters pertaining to cinematography; to bring into closest confederation those leaders in the cinematographic science whose achievements in that field entitle them to membership in the Society, and to promote the interests of all who shall be called to membership in the ASC, that such membership may become a mark of honor and distinction based on merit.

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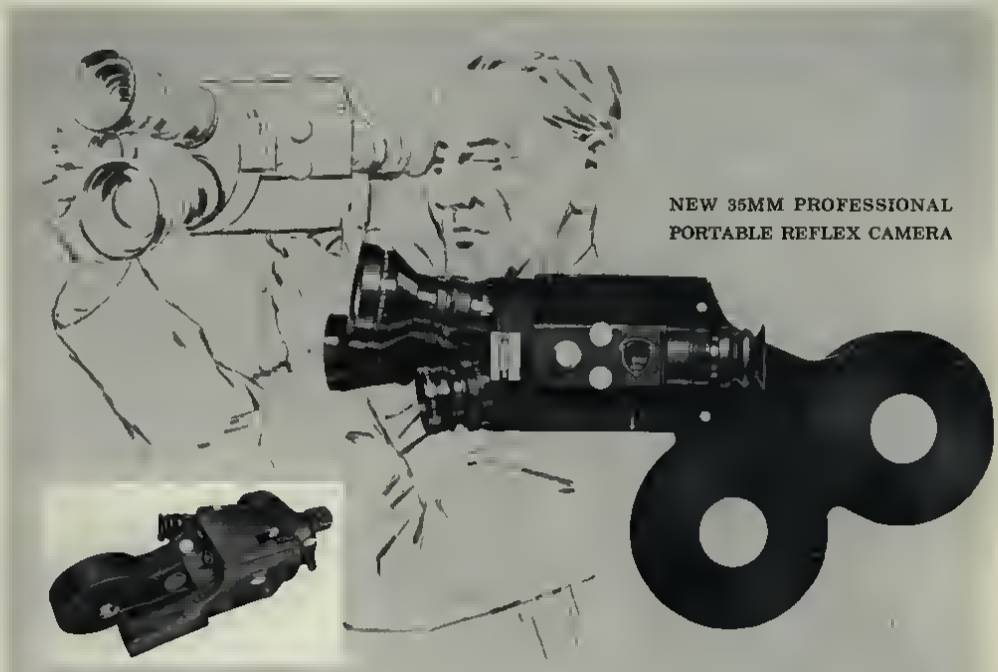
Hand Held or Tripod Mounted*

Here for the first time *is a 35mm reflex motion picture camera which combines streamlined lightweight design with the full range of professional features. Its superbly engineered design by Mitchell—the world's leading source of professional motion picture cameras—assures a remarkable versatility in filming. Among the broad capabilities of the R-35 are: theatrical and television productions—on location and in the studio; underwater use; high speed instrumentation films; and both animation and stop-motion.*



NEW 35MM PROFESSIONAL
PORTABLE REFLEX CAMERA

This camera produces steady, brilliant pictures through its use of dual registration pins and dual pull-down claws. A special series of Super Baltar matched F 2.0 lenses were specifically designed for the R-35 by Bausch & Lomb. Variable opening disc shutter provides positive exposure control. By means of a simple adaptor the R-35 can be used with standard Mitchell 1000' magazines for tripod mounting. These are but a few of the outstanding professional features that make the Mitchell R-35 a major cinematic development. Send for the new R-35 Bulletin

*Tripod adaptor and blimp available as accessories.

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★ MAGNASYNC CORPORATION will demonstrate portable and studio magnetic film recording systems . . . and the new 7-lb. "Nomad" recorder-reproducer for 16mm cameras.

★ COLORTRAN will present a new line of full duty cycle converters with built-in lamp protection — explosion-proof light housings — plus remote control equipment.

DON'T FORGET THE DATES!!

INDUSTRY NEWS

News briefs of industry activities, products and progress

Production Symposiums Slated

Arriflex Corporation of America, Natural Lighting Corporation, and Magnasync Corporation have announced plans to combine efforts in a series of question-and-answer symposiums on film production problems to be held throughout the US during 1961. The renowned command, "Lights, sound, camera, action!" will set the theme for the program.

Open to all industrial, commercial and private motion picture producers, the first symposium is slated for Kansas City, February 14th to 16th, at the Motor Hotel. Subsequent sessions are scheduled for February 20th and 21st at the Sheraton-Jefferson Hotel in Dallas, Texas, and at the Miramar Hotel, Santa Monica, California, on March 31st and April 1st.

The most qualified personnel in the three organizations will be on hand and the symposiums promise the most informative and profitable sessions yet offered to film makers.

* * *

Calvin Workshop Programs

Ideas—creative ideas—keynotes program of the forthcoming Calvin Workshop which takes place February 13, 14, and 15 on the sound stages and in the buildings of the sponsor, Calvin Productions, Inc., Kansas City, Mo.

Tentative subjects and discussions lined up are as follows: Feb. 13, Preplanning the Film, Talent Selection, Location, Interior and Exterior Photography, Studio Lighting.

Feb. 14: Sets and Properties, The Director, 16mm Camera Stocks, Special Camera Effects, Common Errors, The Editing Process, Optical Effects, Film Music. Feb. 15: Technical and Character Animation, The Storyboard, Background Design, Laboratory Operations, Sound Recording, Recording Equipment, The Finished Print.

An impressive Guest Staff promises some interesting discussions. Among them will be Dr. Norwood L. Simmons of Eastman Kodak Co.; Charles H. Ely, Photo Dept., General Electric Co.; Arthur R. Bach, V-P of Modern Talking Picture Service; Col. Richard H. Ranger, Pres. of Rangertone, Inc., and Wm. R. Schmidt, Duke Udings and Jack Paschall of McDonnell Aircraft Co.

* * *

Sound Symposium

The first symposium devoted exclusively to the technical aspects of sound and sound equipment application in industrial and educational film production is announced by Behrend Cine Corp., Chicago, Ill. The two-day session will be held at Chicago's St. Clair Hotel March 30 and 31.

Fifteen experts from the nation's top sound and film companies are slated to read papers on a wide range of subjects related to film sound recording and reproduction.

* * *

1961 SPSE Conference

The Annual Conference of the Society of Photographic Scientists and Engineers will be held in the Arlington Hotel in Binghamton, New York, May 22 to 26.

On October 14 and 15, the Society will also conduct a symposium on rapid film processing at the Shoreham Hotel in Washington, D.C. This meeting will be held in cooperation with the Fifth International Congress on High-Speed Photography scheduled for the week of October 16 in Washington.

* * *

American Film Festival Set For April

Distinguished 16mm films of 1960 will be honored at the 1961 American Film Festival, scheduled for April 19 to 22 at the Barbizon-Plaza Hotel in New York City. The event is sponsored annually by the Educational Film Library Association. The Festival features screenings of outstanding informational films at which juries of 16mm experts vote Blue Ribbon Awards to top contenders in 34 competition categories.

Entry blanks and detailed information will soon be mailed to a list of

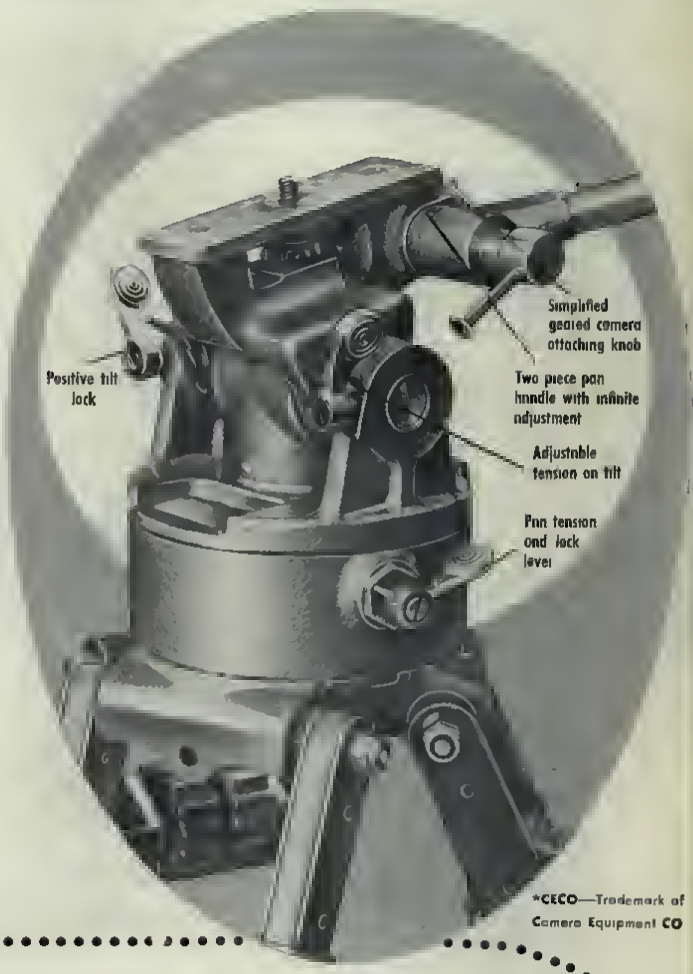
Continued on Page 70

You'd know it blindfolded — that

CECO'S* NEW PRO JUNIOR FLUID HEAD

is the undisputed performance champ

It's smoother, more rugged, better engineered, guoronteed leok-proof ond locks without "diving"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4. Geared camera tie-down knob simplifies attaching of camera to the head. No tools required.
5. Two piece pan handle with infinite angle adjustment.
6. Guaranteed leak proof. All shafts have double end O rings. The pan has an extra trap ring to prevent fluid, which might have escaped the large "O" ring from leaking.
7. Pan and tilt tension control levers are *substantial* — not the itty-bitty screw gimmicks that foil when you breathe on them.
9. The only fluid head which is ideal for use with Arriflex 16mm & 35mm, Bell & Howell Eyemo and Filmo (with or without magazine and motor drives), Maurer 16mm, Auricon Cine Voice and Conversion, Cine-Kodak Special and the Bolex Cameras.

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Operating temperature range: 20° below zero to 120° F. Forward tilt 90°. Backward tilt 50°. Total weight 9¼ lbs. Additional mechanical drag can be imposed on both pan & tilt by convenient lever locks. All shafts run on bronze bearings, and shoulder on hardened steel washers, eliminating freeze-ups.

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Single Sprocket 35mm
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Single Sprocket 16mm
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16 or 35mm $32.50 ea

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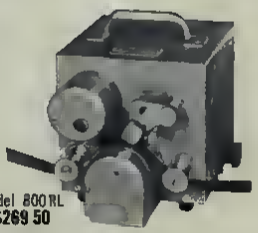

Model 800 RL
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optical sound readers

Model 600 RL
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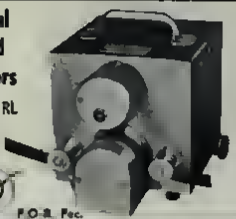

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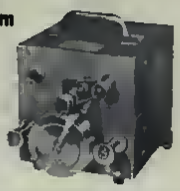
magnetic film and tape sound reader



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INDUSTRY NEWS

Continued from Page 68

1800 film producers, sponsors, and distributors

* * *

Elect Neal Keahn General Film VP

Neal Keehn has been elected Vice-President in charge of Sales at General Film Laboratories in Hollywood. William E. Gephart, Jr., company President who made the announcement last month, states Keehn's duties will include direction of General's advertising and sales promotion as well as continuing to edit the *Rewind*, General's well-known publication for film producers

Previously regional VP in charge of the company's Central Division office in Kansas City, Keehn will now headquarter at the company's Hollywood office. Before joining General, Keehn was Sales VP of Calvin Productions, Kansas City, Mo., and Director of the Calvin Workshop. He was recently elected a Fellow of the SMPTE

* * *

Museum In Quest For Stills

The Hollywood Motion Picture and Television Museum is presently gathering information as to source of old still photographs of early-day motion picture production activities as well as production stills

"At this time," says Whitney Williams, Chairman of the Museum's Old Stills Committee, "the Museum wants to know where such pictures are, who has them, and under what terms the owners will make them available—i.e., through gift, loan or otherwise. At present, the Museum is not seeking actual possession of such stills—only information as to their location so the committee can act to acquire them when the necessary space is available."

Communications should be addressed to Williams care of the Hollywood Motion Picture and Television Museum, Suite 200, 291 So. La Cienega Blvd., Beverly Hills, Calif.

* * *

Coursas In Animation

A series of courses of interest to animators and students of animation techniques is offered by the University of Southern California. Los Angeles Instructional staff includes men prominent in the industry. Registration dates are February 2 to 4. Tuition is $32.00 per unit.

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BACH Auricon®

ALL-TRANSISTORIZED FILMAGNETIC® RECORDING AMPLIFIER MODEL MA-11

- ★ All transistorized! Bulky batteries and heavy transformers eliminated
- ★ Rechargeable battery or continuous A C operation.
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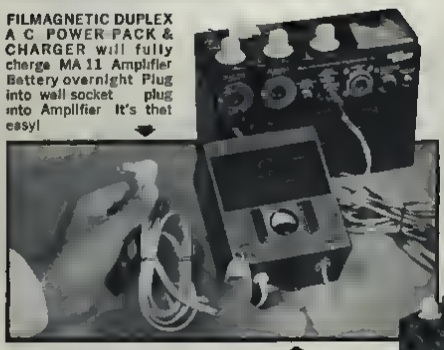
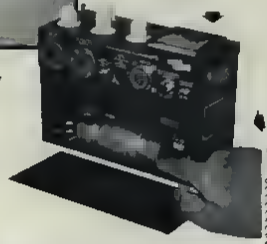
- ★ Equipped with transistor-matched FILMAGNETIC heads.
- ★ Fitted carrying case can be conveniently stored under pullman seat or carried as hand-luggage on plane

FILMAGNETIC DUPLEX A C POWER PACK & CHARGER will fully charge MA 11 Amplifier Battery overnight. Plug into wall socket, plug into Amplifier. It's that easy!



ALSO USED AS POWER-PACK for continuously operating Amplifier direct from 115 Volt A.C. current

Fully charged Battery will operate Filmagnetic Model MA 11 Amplifier for more than 8 hours of sound on film recording



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FILMAGNETIC sound-on-film recording can be factory installed on all existing or earlier, Auricon Cameras. Recording on pre-stripe film, black and white or color, you get professional quality lip-sync talking pictures and brilliant music reproduction. After normal processing, the film can be shown on any 16mm magnetic-sound projector. In use since 1955 for exacting professional requirements, FILMAGNETIC, with the new MA-11 Amplifier, brings you the means for producing the finest in professional 16mm sound-on-film motion pictures. The optical sound-on-film capability of your Auricon Camera is not impaired. Change back and forth at will without tools!

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100 ft. Runs 2¾ min

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AURICON SUPER 1200
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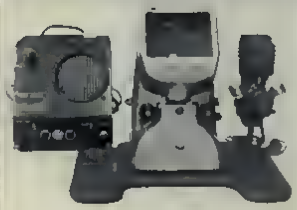

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DUAL SOUND EDITOR

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★ Works from right to left or left to right
★ Dual Editor (without viewer) $195.00
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★ The only ballbearing tightwind
★ Eliminates cinching or abrasions
★ Winds film evenly—NO SLIPPING
★ Fitted to any 16mm or 35mm rewind

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NEW DESIGN
FILM BIN
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WHAT'S NEW

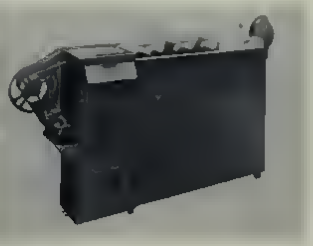
IN EQUIPMENT, ACCESSORIES, SERVICES

New ColorTran Converter

Natural Lighting Corp., 630 So Flower St., Burbank St., Burbank, Calif., announces a completely new Colortran converter featuring heavier construction, greater output, and increased flexibility of control. Tradenamed Cinemaster Chief Mark II, the new converter affords lighting with ColorTran units equaling ten 5-K's or 50,000 watts of usable photographic light.

Six power outputs are provided, each independently controlled by color-coded and numbered pushbutton switches. Exact color temperatures can be monitored and light intensities selected and varied for each lamp or group of lamps on any outlet.

At 3200° Kelvin the converter will handle lamps totaling 6,250 watts from the 200/240 volts input, or 3,375 watts from the 100/120 volt input. List price is $309.00.



16mm Reversal Processor

S.O.S. Cinema Supply Corp., 602 West 52nd St., New York 19, N.Y. is distributor for the new Allen 16mm Processor Model 700, a machine designed for fast, economical processing of 16mm reversal film. It is convertible for negative or positive film, also. Features include daylight loading on 1200 ft. reels, variable speed drive, bottom tank drains, and plumbing with back-flushing system, recirculation, and refrigeration. The film passes through 9 tanks and a dry box, all positions in line, at speeds up to 20-ft. per minute. Prices begin at $2,995.

Special Arriflex Camera

Arriflex Corp. of America, 257 Park Ave. South, New York 10, N. Y., announces a special model 35mm Arriflex equipped with improved movement and a special 32-volt DC motor capable of driving the camera up to 80 fps. Motor is equipped with an external rheostat for controlling camera speeds. Built-in tachometer is calibrated to 80 fps. The new Arriflex is designed to meet need for a fine 35mm camera with high capability for both instrumentation and documentation uses. It accepts all standard 35mm Arriflex accessories. List price is $1,995, which includes special motor and speed control but no lenses or magazines.

Film Editor-Viewer

Interemema Corp., New York, N. Y.,

Continued on Page 74

in the east . . . it's

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for color* and black & white

MOVIELAB FILM LABORATORIES
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Single system 16mm sound-on-film cameras. Latest model Cine-Voice sound cameras. TV kinescope shutters, new & used in stock

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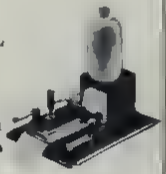
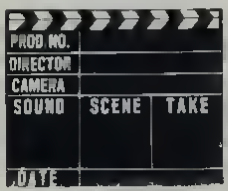


Cleans, conditions & lubricates your film in one easy operation

Ecco Model D applicator $33.00
Ecco #1500 cleaning fluid, gal 9.00
Ecco #2000 negative cleaning fluid, gal 6.50

CAMART SLATE & CLAPSTICK



Large professional size for sound productions. Contains space for all essential information. Originally sold for $11.75. Now only

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Postage added. F.O.B. New York

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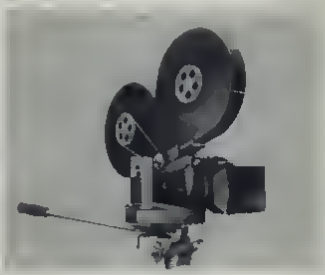
Cable Cameramart

WHAT'S NEW

Continued from Page 72

announces the new Acmade Mark II Editing table, available for 16mm and/or 35mm film. Features include continuous instead of intermittent film movement, 8"x6" projected picture, variable or sync speeds, instant-stop foot or hand controls, and instant clutch action for film or sound paths. Machine can be supplied with separate optical and/or magnetic track readers. Complete unit, including, in addition to above, footage, frame and time counters, takeups and titewinds is $2 975. Equipment is available from and on display at Florman & Babb, Inc., 68 West 45th St., New York, N.Y.



Special Motor Base for Arri 35

Camera Equip. Co., Inc., 315 W 43rd St., New York 36, N. Y., has designed and is producing a special motor base for the Arriflex 35mm Vari Speed Motor. The new CECO base overcomes the problem of imbalance encountered when camera is used otherwise and operated for tilt. The CECO base permits re-locating camera motor in an adjacent, upright position, as shown in photo, without need for hihat. The base uses the same Arriflex 35mm Vari Speed Motor, and lowers the center of gravity by bringing the camera closer to the tilt pivot point of the tripod. List price is $300.

Lowel-Light Kit

The original Lowel-Light Kit announced in this column in an earlier issue, has been enlarged to accommodate five Lowel-Light Barndoors. The basic kit includes 5 tape-up, clamp-on lighting units complete with cords, plus roll of Gaffer Tape. Overall size of case is 9"x12"x14". List price is $29.95. Barndoors are $5.75 each.

New Auricon Sound System

Bach-Auricon, Inc., 6950 Romaine, Hollywood 38, Calif., announces a new lightweight all-transistor Filmagnetic recording system for Auricon cameras. Recording and monitor heads of new system can be factory-installed on all existing Auricon cameras without impairing the optical sound recording capability. With the new unit, lip-sync sound may be magnetically recorded on pre-striped 16mm black-and-white or color film.

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PHOTOGRAPHIC ASSIGNMENTS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

By MARION HUTCHINS

NOTE: Asterisks indicate television film productions

ALLIED ARTISTS

CARL GUTHRIE, ASC, "The Big Bankroll" (Bischof-Diamond Prod.) with David Janssen and Mickey Rooney, Joe Newman, director.

ERNEST HALLER, ASC, "Armored Command" (Shootin in Germany) with Howard Keel and Tina Louise. Byron Haskin, director.

LEON SHAMROY, ASC

Directing the photography of "Snow White and the Three Stooges" in CinemaScope and color at 20th Century Fox

AMERICAN NATIONAL

MONROE ASKINS, "Bat Masterson"* (Ziv-TV) with Gene Barry.

CURT FETTERS, MONROE ASKINS, "Case of the Dangerous Robin"* (Ziv-TV) with Rick Jason

BRICK MARQUARD, CURT FETTERS, "Lock Up"* (Ziv-TV) with MacDonald Carey

RICHARD RAWLINGS, "Acquanaut"* (Ziv-TV) with Ralph Raeger, "Sky Divers"* (Ziv-TV) Alex Singer, director

FLOYD CROSBY, ASC, "The Pit and the Pendulum" (Panavision & Color) with Vincent Price and John Kerr. Roger Corman, producer-director

CASCADE PICTURES

ROY SEAWRIGHT, Commercials*

ELWOOD BREDELL, ASC, Commercials*

HAROLD MARZORATI, ASC, Commercials*

COLUMBIA STUDIOS

GERT ANDERSEN, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed Andrew McCullough, director

JOSEPH BIROC, ASC, "The Devil at 4 O'Clock" (Shooting in Hawaii LeRoy Kohlmar Prods.— C'Scope & Color) with Spencer Tracy and Frank Sinatra. Mervyn LeRoy, director.

DOUGLAS SLOCOMBE, "Taste of Fear" (Hammer Films Prod., shooting in England) with Susan Strasberg and Ronald Lewis Seth Holt, director

IRVING LIPPMAN, "Manhunt"* (Screen Gems) with Victor Jory and Pat McVey Fred Jackman, director

JACK MARTA "Route 66"* (Screen Gems) with Marty Milner and George Maharis.

IRVING LIPPMAN, CHARLES WELBORN, "Dennis the Menace"* (Screen Gems) with Joy North and Herbert Anderson

PHILIP TANNURA, ASC, "Two Faces West"* (Screen Gems) with Charles Bateman and June Blair

ROBERT BRONNER, ASC, "Gidget Goes Hawaiian (shooting in Hawaii) with James Darren and Deborah Walley. Paul Wendkos director

FRED GATELY, ASC, "My Sister Eileen"* (Screen Gems) with Shirley Boone and Elaine Stritch

CHARLES LAWTON, JR., "Jean and John"* (Pilot, Screen Gems) Norman Tokar, director

DESILU—Cahuenga

SID HICKOX, ASC, "The Andy Griffith Show"* (Desilu Prods.) with Andy Griffith.

HENRY CRONJAGER, "One Happy Family"* (Desilu Prods.), "Jack Benny Show"* (Desilu Prods.) with Jack Benny

ROBERT DE GRASSE, ASC, "Angel"* (Desilu Prods.) with Annie Fargo and Marshall Thompson, Lamont Johnson, director "Danny Thomas Show"* (Desilu Prods.) with Danny Thomas

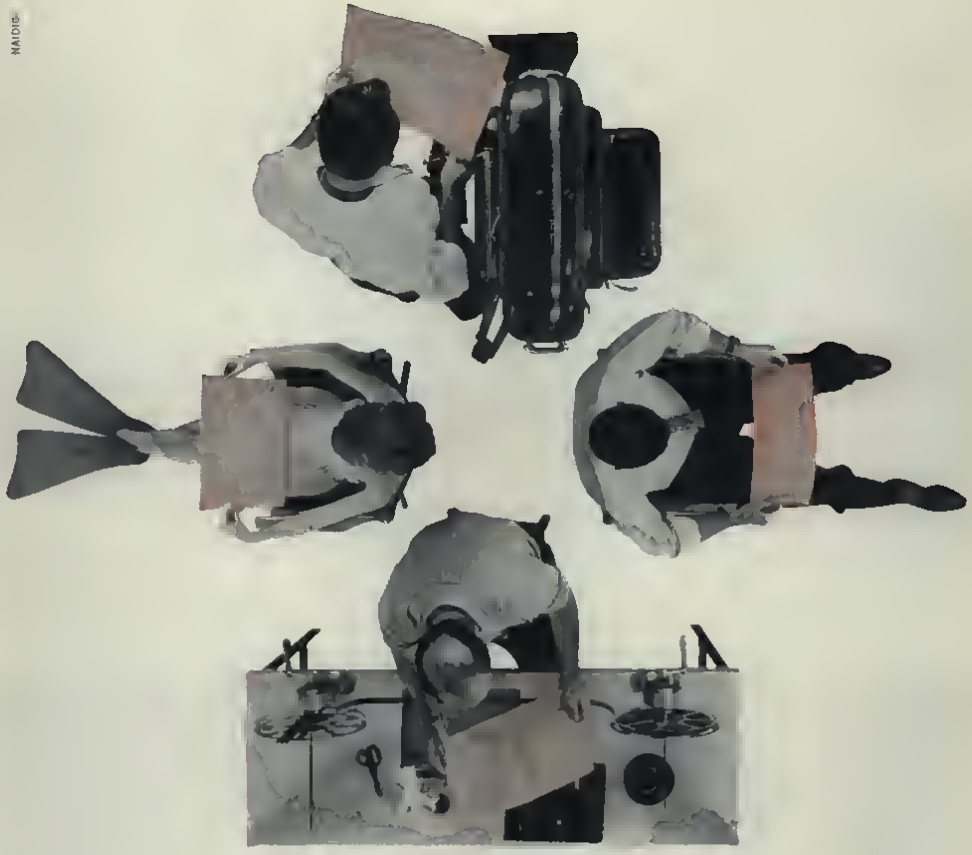
DESILU—Culver City

CHARLES STRAUMER, "The Untouchables"* (Desilu Prods.) with Robert Stack and Jerry Paris

Continued on Page 82

BURNETT GUFFEY, ASC

Directing photography of "Birdman of Alcatraz" for producer Harold Hecht for United Artists release. Starred are Burt Lancaster, Karl Malden



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Eddie Blackburn Honored by ASC

Cinematographers fete retiring head of Hollywood office of W. J. German, Inc.

WORK OF ART was ornate layer cake presented to Edward O. Blackburn (left) by members of the ASC at gala dinner honoring the retiring manager of the W. J. German Inc. west coast office. Looking on are ASC President Lee Garmes (center), and William J. German, President of the German company.

EDWARD O. BLACKBURN, good friend and Honorary Member of the American Society of Cinematographers, was feted with a dinner given in his honor January 23 by the Society at its club house in Hollywood.

Event followed announcement by Blackburn of his retirement from active management of the Hollywood office of W. J. German, Inc., distributors of Eastman professional motion picture films.

TV star Danny Thomas, a longtime friend of Blackburn, delivered a heartwarming and humorous testimonial. Others who recalled their associations and experiences with Eddie Blackburn were ASC President Lee Garmes, Hal Mohr, ASC, Edwin Schallert, former drama editor of the *Los Angeles Times*, and a host of others.

A surprise festive note was the large ornate layer cake presented to the guest of honor. Tiny figures representing Blackburn and his sales staff gathered around him in conference featured the cake's decor.

Hal Mohr, on behalf of the members of the ASC, presented Blackburn

Continued on Page 81

COMMEMORATIVE PLAQUE presented to Mr. Blackburn is object of admiration of Danny Thomas (left). Hal Mohr who made presentation in behalf of the ASC, and Lee Garmes, who presided.

EDDIE BLACKBURN acknowledges the many accolades heaped upon him for his helpfulness to cameramen and others in industry. Hawaiian lei was gift from Glen Kirschner, ASC, in Honolulu.

ONLY PRESIDENT KENNEDY shook more hands in an evening than did Eddie Blackburn following dinner tendered him by ASC. Here, wishing him well is MGM cinematographer Joseph Ruttenberg.

BIGGEST ATTENDANCE IN YEARS marked the gala dinner which was held at the ASC clubhouse in Hollywood. Center table in picture above was set aside for members of the W. J. German, Inc. organization. At left foreground is J. L. Courcier, the company's new west coast manager. Directly opposite him is John Pieter, sales manager of the company.

THREE VETERANS of the W. J. German company—George Gibson (left), Blackburn and J. L. "Sud" Courcier. Together they've been selling E-K professional motion picture films in Hollywood since the early 20's.

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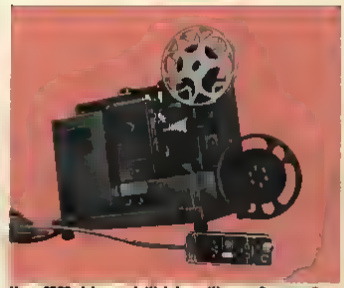

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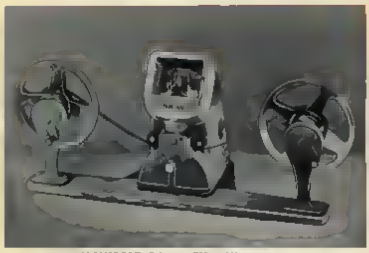
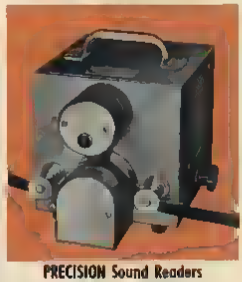


MOVISCOP 16mm Film Viewer



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Continued from Page 74

with a commemorative plaque " . . . in recognition of his outstanding contributions to the art of cinematography" and further citing him for "his long and brilliant career in the motion picture industry."

After more than 30 years of servicing the Hollywood studios with Eastman professional films, Eddie Blackburn was stepping down from his office as Vice-president and Manager of W. J. German, Inc.'s Hollywood office. During these years, he has been much more than a supplier to the movie industry. He has been a warm, always-friendly, vital part of the Hollywood scene. Few individuals in Hollywood have as many friends as Eddie Blackburn.

J. L. "Bud" Courcier, former V-P of the German organization, with which he has been associated for 32 years, succeeds Mr. Blackburn. He is an Associate Member of the ASC.

* * *

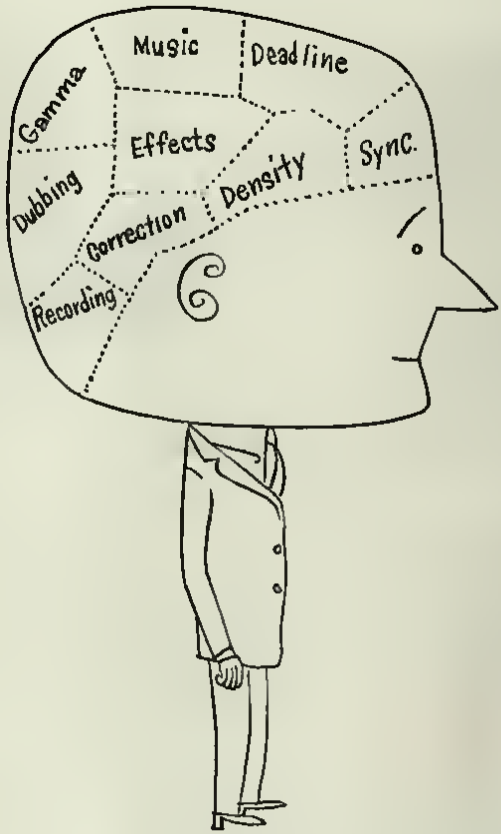
Lewis Mansfield, technical consultant with Consolidated Film Industries, Hollywood, has been elected to Associate Membership in the American Society of Cinematographers.

* * *

It's "Awards" Season again, and preceding the annual "Oscar" Derby are numerous industry awards, polls, etc., in which the year's best cinematography is cited. The selections of *Film Daily*, industry trade paper, were announced in these pages last month. Latest trade paper poll—that of *Limelight*, published in Hollywood — cites the following cinematographers for

Continued on Page 121

OTTO HELLER (right), in Hollywood latter part of January to complete photography of "The Big Show," was a visitor at the ASC clubhouse where he was presented with copy of the new American Cinematographer Manual by Walter Strenge, ASC



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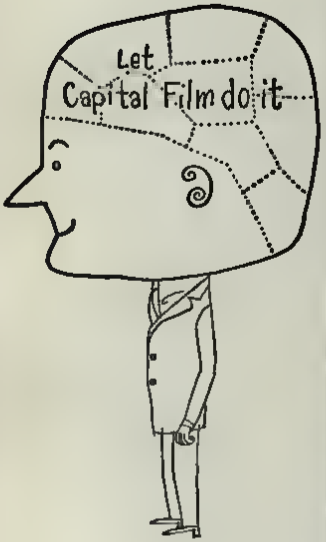

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PHOTOGRAPHIC ASSIGNMENTS

Continued from Page 76

DESILU STUDIOS—Culver City

LUCIEN ANDRIOT, ASC, "Guestward Ho"* (Desilu Prods.) with Joanne Dru and Mark Miller.

LOTHROP WOOTH, ASC, "The Real McCoy's"* (Brennan-Westgate Prods.) with Walter Brennan.

HAROLD LIPSTEIN, ASC
Photographing the "Adventures of Ozzie and Harriet" television film series at General Service Studios in Hollywood

DESILU—Gower

CHARLES VAN ENGER, ASC, "Lassie"* (Jack Wrather Prods.) with June Lockhart and Jon Provost.

ROBERT PLANCK, ASC, "My Three Sons"* (Desilu Prods.) with Fred MacMurray and William Frawley.

ROBERT PITTACK, ASC, "Ann Sothern Show"* (Desilu Prods.) with Ann Sothern.

LUCIEN ANDRIOT, ASC, "Harrigan and Son"* (Desilu Prods.) with Pat D'Brien and Roger Perry.

EDWARD FITZGERALD, ASC, "Happy"* (Desilu Prods.) with Reenie Burns.

FOX WESTERN AVENUE

JAMES VAN TREES, ASC, "Dobie Gillis"* with Dwayne Hickman. Rod Amateau, director.

GENERAL SERVICE STUDIOS

FRANK REDMAN, ASC, "Perry Mason"* (CBS TV) with Raymond Burr and Barbara Hale.

MEREDITH NICHOLSON, "Blue Angels"* (Gallu Prods.) with Don Gordon and Morgan Jones.

HAROLD LIPSTEIN, ASC, "Adventures of Ozzie and Harriet"* (Stage 5 Prods.) with the Nelson family. Ozzie Nelson, director.

HARRY WOLFE, "Hennessey"* (Hennessey Prods.) with Jackie Cooper. Don McGuire, director.

MAURY GERTSMAN, ASC, "Mr. Ed"* (Filmways Prods.) with Allan Young.

GOLDWYN STUDIOS

NORBERT BRODINE, ASC, EUGENE POLITO, "Loretta Young Show"* (Toreto Prods.) with Loretta Young.

INDEPENDENT

DANIEL FAPP, ASC, "West Side Story" (Panavision 70 & Color. Mirisch Picts—Seven Arts Prods.; shooting in N.Y.) with Natalie Wood and Richard Beymer. Robert Wise and Jerome Robbins, directors.

CHRISTIAN MATRAS, "Paris Blues" (Pennebaker for UA, shooting in Paris) with Paul Newman and Joanne Woodward. Martin Ritt, director.

BURNETT GUFFEY, ASC, "Birdman of Alcatraz" (Harold Hecht Prod. for UA release) with Burt Lancaster and Karl Malden. John Frankenheimer, director.

RUSSELL METTY, ASC, "By Love Possessed" (Mirisch Pictures, Inc—Seven Artists Preds. for UA) with Lana Turner and Efrem Zimbalist, Jr. John Sturges, director.

ROBERT KRASKER, "El Cid"* (Super Technirama 70, Samuel Bronston Prods. with D E A R . Films for Allied Artists & J. Arthur Rank; shooting in Spain) with Charlton Heston and Sophia Loren. Anthony Mann, director.

RUSSELL METTY, ASC, "By Love Possessed" (Mirisch Pictures, Inc.—Seven Arts Prods. for UA) with Lana Turner and Efrem Zimbalist, Jr. John Sturges, director.

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NICK MUSURACA, ASC, "The Islanders"* with William Reynolds and James Philbrook.

STUART THOMPSON, ASC, "National Velvet"* (Velvet Prods.) with Lori Martin and Ann Doran.

WILLIAM SPENCER, "Peter Gunn"* (Spartan Prods.) with Craig Stevens.

MILTON KRASNER, ASC, "Four Horsemen of the Apocalypse" (C'Scope & Color. Julian Blaustein Prod.); with Glenn Ford and Ingrid Thulin. Vincente Minnelli, director.

ROBERT SURTEES, ASC, "Mutiny on the Bounty" (Ultra Panavision & Color, shooting in Tahiti. Arcola Prods.) with Marlon Brando and Trevor Howard. Sir Carol Reed, director.

JOSEPH RUTTENBERG, ASC, "Ada" (C'Scope & Color, Avon Prod.) with Susan Hayward and Dean Martin. Daniel Mann, director.

JOHN NICHOLAUS, "The Gunslingers"* (CBS TV) with Preston Foster and Tony Young.

HARKNESS SMITH, "The Americans"*

N.B.C.

ALAN STENSVOLD, ASC, "Dinah Shore Show" (Sewanee Prods., "Groucho Marx Show" (Film Craft Prods.) "Roy Rogers Show" (Sewanee Prods.).

Continued on Page 125

DANIEL FAPP, ASC
Shooting "The West Side Story" in Panavision 70 and Eastman Color for Producer Robert Wise for United Artists release

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4	14"	"
5.6	12"	"
8	10"	"
11	9"	"
16	8½"	"

APPROXIMATE MECHANICAL SPECIFICATIONS

Overall length beyond lens mount; 4½"; with lens shade; 6"
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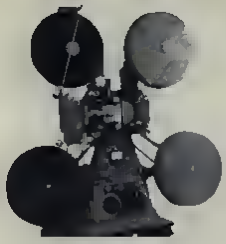

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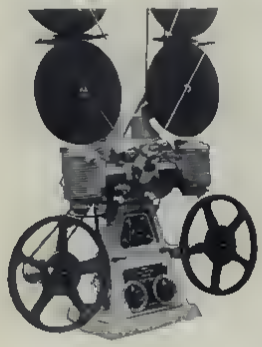

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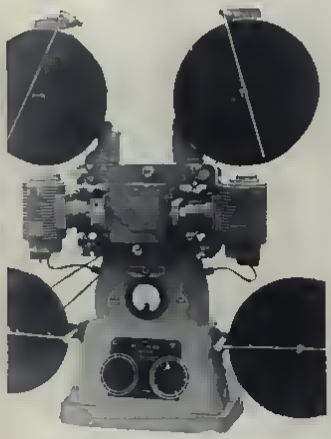

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WALTER STRENGE'S

QUESTIONS & ANSWERS

Need advice on a picture making problem? Your questions are invited and will be answered by mail. Questions and answers considered of general interest will appear in this column each month

Q In shooting about a hundred feet of exteriors (black-and-white) for a company film, light was so bright I was unable to stop down the lens as much as the meter indicated. I requested the lab to give this roll special attention and compensate for the over-exposure in development. The results, however, were not up to expectations. Shouldn't a capable laboratory been able to save this footage for me?—*A.C.H., Portland, Ore.*

Answer: A point you should always keep in mind is to use the correct film for the job at hand. It is obvious that if your shooting assignment calls for "exterior, day" that there is no need to use a fast film for those scenes. With all film stocks generally available in 100-foot rolls, it pays to keep a supply of both slow and fast film on hand at all times and to use the right film for the light conditions it is designed for. In this way, you'll never have to depend on the film laboratory to pull you out of the hole by doing the impossible.

Another good point to remember is to rely on your local film laboratory to help you with your problems, and to supply friendly advice when you need it regarding any shooting problem.

Q I have an assignment to shoot 16mm color film in central Mexico and parts of Central America. Because I shall often be working in isolated areas and also because of the wide range of climatic conditions that I shall encounter, please give me a few brief tips on caring, storing and shipping exposed film under these conditions. —*J. deS, Dallas, Texas.*

Answer: The advice you request would fill a small book, and such a book—actually a booklet—is available from Eastman Kodak Co., Rochester, N.Y. Its title: "Storage and Preservation of Motion Picture Film."

Meantime, we shall give you the following facts to help you in your planning. Exposed film, particularly color film, often deteriorates more rapidly than unexposed film. Where color film cannot be processed reasonably soon after exposure it should be protected from excessive humidity and stored where it is cool, or even cold, until it can be processed.

Delays in processing exposed film are sometimes unavoidable. In such cases it is advisable to follow the steps prescribed above, then ship the film to your film laboratory by air at the very first opportunity.

Q Although I use pretty much the same set of lenses all the time, I notice that the sharpness quality of my work varies. I have investigated the camera mechanism, had the lenses tested, etc., but everything checks out normal. Where else can I look for the cause of this trouble?—*B. B. D, Chicago, Ill.*

Answer: You did not say, but it is presumed that your problem exists with footage exposed indoors where scenes are shot under artificial light.

As pointed out in the *American Cinematographer Manual* (pp. 155) a factor influencing image sharpness that is rarely considered is the *quality* of the illumination. Cinematographers diffuse their lights in order to achieve softer effects. It is also possible to employ a *sharp* light such as an arc or a spotlight so that sharp shadows are produced. The resulting picture will possess an apparently greater sharpness, although there will be no actual increase in lens definition. This is due to the sharp shadows and increased contrast that such lighting provides.

Therefore it is well to remember that a sharp, hard light, possessing a small point source, will contribute to image sharpness. This can be proven by shooting two tests of the same scene with the same lens under both arc light and fluorescent illumination. Outdoors, both a sunny and an overcast day will produce similar effects. ■

DON'T FORGET TO WRITE

If you've got a problem of any kind related to making a motion picture, be it color or black-and-white, 16mm, 35mm, or 70mm, let us help you with professional advice. Be sure to accompany your letter with a stamped, addressed envelope for your reply.

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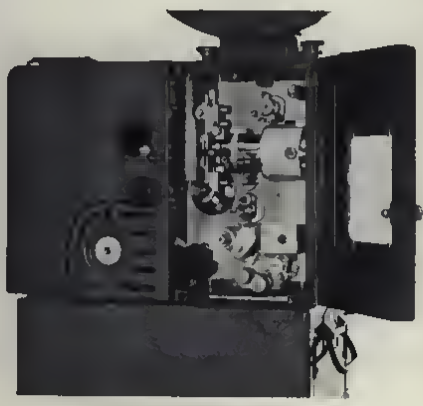

Interior showing Selsyn Motor and glass heat filter.

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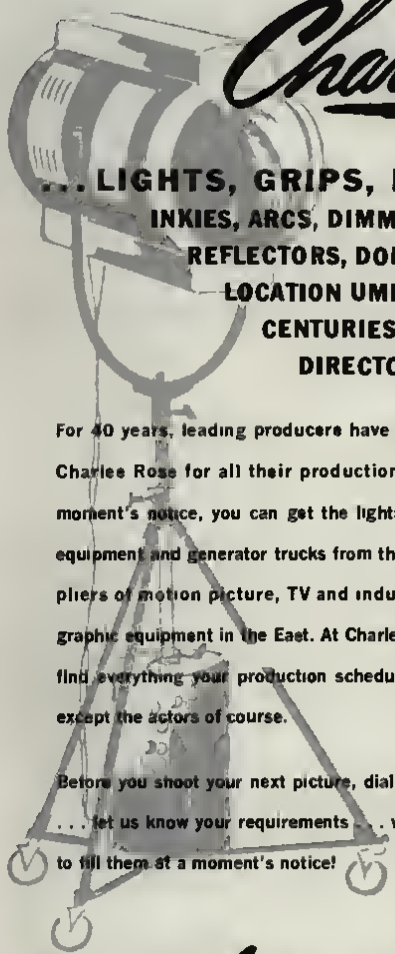

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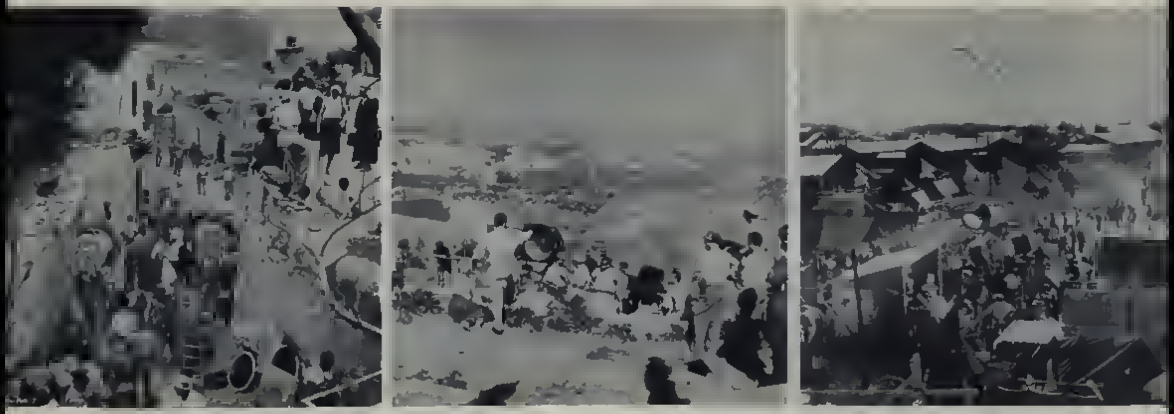

PHOTOS ABOVE SHOW the camera crew in action setting up equipment and shooting scenes in three different locations for Otto Preminger's production of "Exodus," filmed entirely on locations in Israel and the island of Cyprus. Director of Photography Sam Leavitt, ASC, is fourth from right in center photo which pictures one of the more difficult locations in which the "Exodus" company worked. Picture was filmed in color and Super Panavision 70. The lighting problems, according to Leavitt, were enormous.

Filming "Exodus" In Super-Panavision 70

Sam Leavitt's photography of "Exodus" demonstrates a resourcefulness and determination that could only result in one of the most talked-about films of the year.

By HERB A. LIGHTMAN

FILMING THE IMPOSSIBLE is all in the day's work to the average Hollywood Director of Photography—especially if he has all the facilities of a major studio close at hand. But if there were to be a special award given for achievement beyond the line of duty if would surely go to Sam Leavitt, ASC, for his photography of Otto Preminger's "Exodus" under conditions that might truthfully be called "*worse* than impossible."

This distinction arises mainly out of the fact that the entire 3-hour-plus production, including interiors, was filmed in actual locations on the island of Cyprus and in Israel, with not a single scene shot in nor anywhere near a studio sound stage.

Add to this: Preminger's style of directing the action in long scenes with much camera movement and frequent 360° pans, leaving little or no area out of camera range in which to mount lights or reflectors.

Add to this: a preponderance of scenes in which the action played continuously from indoors to outdoors (or vice versa), resulting in a constant struggle for Leavitt to balance for color the quality and intensity of the light.

Add to this, also, the intricate sequences shot at dusk with only five minutes of exposurable light, "Process" shots of a wild automobile chase filmed *without* process screens, and Super-Panavision 70 sequences shot on "sets" barely larger than a telephone booth.

In a highly successful bid for realism, Director Preminger spurned the comfort of the sound stage and converted Israel, and particularly the Galilee area, into a vast movie set where famous landmarks played a prominent part in the action and added immensely to the authenticity of the film. Locales included the brooding towers of the Crusader fortress at Acre, the busy harbor of Haifa, the picturesque ruins of Caesarea where Roman emperors once held court, the divided city of Jerusalem and the bare-walled simplicity of Kafr Kana, the Arab village where Christ performed his first miracle 2,000 years ago.

On Cyprus, the capital city of Nicosia and the town of Famagusta with its old harbor provided additional locations for the film. Panavision cam-

eras also moved high into the Kyrenian mountain range to capture a scene against the romantic background of time-worn St. Hilarion Castle.

Difficulties of filming the opening scene of the picture are characteristic of many other shots that followed. The scene fades in, conventionally enough, on a long shot showing the hills and harbor of Cyprus, fully illumined by clear sunlight. Then the camera begins what turns out to be an almost 360° pan to the left, encompassing a sweep of haze-shrouded sea and ending on a heavily shadowed composition of two people surveying the scene. In addition to the fact that there was a significant variation in the amount of exposurable light on the several areas of the scene, it was impossible to find a place out of camera range to conceal enough booster lights or reflectors to soften the shadows cast on the players by the overhead sunlight. Delicate variation of the shutter angle during the pan, plus precise printing control in the Technicolor lab did much to smooth out the scene, and it is an effective opener for the picture.

In filming "Exodus" Preminger made lavish use of the moving camera and, rather than break up a sequence into a series of separate cuts, preferred to shoot large blocks of the script in continuous scenes with the camera and/or the actors moving toward or away from each other to create a variety of composition. This resulted in a greatly reduced number of separate camera set-ups and a correspondingly economy in time and budget (especially important to Preminger, since he is his own producer), plus a certain fluidity of action and continuity. Such camera treatment invariably holds certain limitations for the film editor (who may find himself unable to tighten or loosen the pace of a sequence for lack of something to cut away to); and for the average cinematographer, shooting on locations where it is impossible to conceal lamps and reflectors could become a nightmare.

However, to Leavitt it represented a refreshing challenge. Besides "Exodus" he has photographed four other features for Preminger ("Man With The Golden Arm," "Carmen Jones," "Court Martial of Billy Mitchell," "Anatomy of a Murder"), and he has a tremendous admiration for the controversial director.

"Otto Preminger makes what I call 'real motion pictures,' in that he uses the camera to its fullest capacity," he explains. "He knows exactly what he wants and he gives you plenty of time to achieve it. But there is no waste motion. Unlike many directors who shoot a scene from a dozen different angles to make sure they have something that will cut together, he plans each scene carefully, stages it that way and uses it that way. He is wonderful to work with because he appreciates a cameraman's efforts."

Nevertheless, a cameraman's ingenuity is some-

Continued on Page 110

ABOVE PHOTOS illustrate three typical locations in which scenes were shot for "Exodus." Not a single scene for the picture was shot in or anywhere near a studio sound stage. As with most Preminger pictures, Exodus is marked by numerous moving camera shots.

FIG 1—Supersonic rocket sled zooms along tracks at the US Air Force Flight Test Center at Edwards, California, for test of rocket-propelled ejection seat for jet aircraft. Besides dummy pilot in seat undergoing test, sled also carries several 16mm instrumentation cameras (see diagram, opposite page) which records various phases of the seat ejection operation.

Cameras On The Hot Seat

Haw 16mm instrumentation cameras are used ta phatagroph seat-ejection tests in supersanic rocket-sled installations.

By LEIGH ALLEN

DEVELOPMENT OF THE highly-successful seat ejection equipment now in use in U. S. trainer and fighter aircraft is due in large part to the photographic records made during tests by high-speed instrumentation cameras. The testing and developing of this equipment continues at the U S. Naval Ordnance Test Station's Supersonic Track Division at China Lake, Calif., and at the Air Force Flight Test Center at Edwards, Calif. At both locations, heavy use is made of photographic instrumentation in rocket sled testing programs.

The drawing on opposite page (Fig. 4) shows the extent of high-speed camera installations on a sled that has tested components of the X-15 ejection system. In the seven camera positions are three Fastairs and two Photo-Sonics 16mm 1-B's that operate at moderately high-speeds, and two Photo-Sonics 16mm 1C's that operate at 4,000 frames per second.

Today's complex operation at Edwards is the result of 12 years of progress. The first track operation for data was photographed using three hand-panned Eyemo-Q 35mm cameras. Early attempts to gather data were made by using 16mm Kodak high-speed cameras, started in banks of four by touching two bare wires together. Today, tests at Edwards Air Force Base utilize as many as 54 cameras of different types so that technical data, such as velocity, trajectory, pitch, roll and yaw, may be obtianed from motion picture film as well as to provide a pictorial study of the test being conducted.

An electronic radio link device provides precision programming of all remote cameras as well as a binary timing system for accurate evaluation of tests.

The placement and operation of the many data-gathering cam-

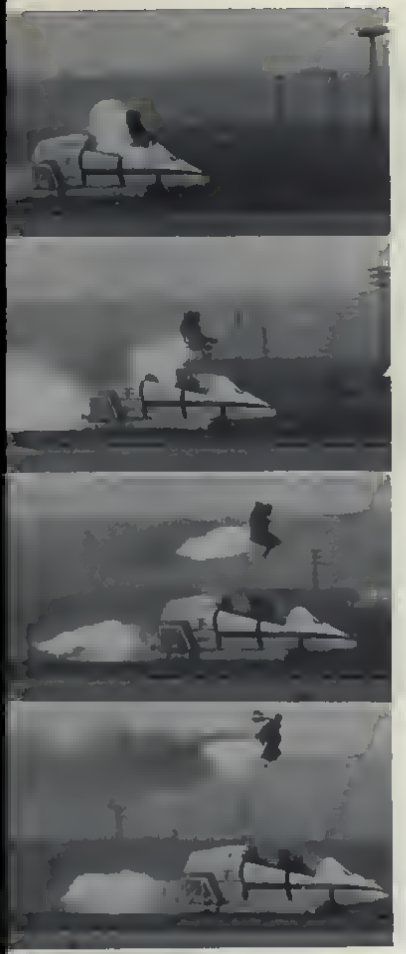

FIG 2—A typical small rocket sled camera installation, showing two Photo-Sonics 16mm-1B prism cameras in place. One camera is angled downward and focused on the sled's operational equipment, while the other is set to record ejection of the seat. Lenses are securely taped to withstand the severe vibrations and accelerations encountered in the test runs. The cameras are shown with the film magazines removed.

eras is the responsibility of Mr. Merrill C. Brown of the Track Photo Unit.

Fig. 3 shows a successful seat ejection operation in a series of four frames from a motion picture recorded at the U. S. Naval Ordnance Test Station's Supersonic Track at China Lake. The

FIG 3—Typical seat-ejection sequence, showing dummy emerging from cockpit of rocket sled in a successful test of rocket-propelled ejection seat at NOTS, China Lake, Calif. Photographic data such as this has contributed substantially in improving the rocket seat ejection system.

data obtained from tests such as this have been of great importance in the development of improved rocket-seat ejection systems, such as the NOTS RAYPEC seat, which not only provides safe clearance of tail surfaces of an aircraft, but can also permit safe ejection at ground level and zero velocity.

A typical small sled installation on the NOTS research track is shown in Fig. 2. Three Photo-Sonics 16mm 1B prism cameras

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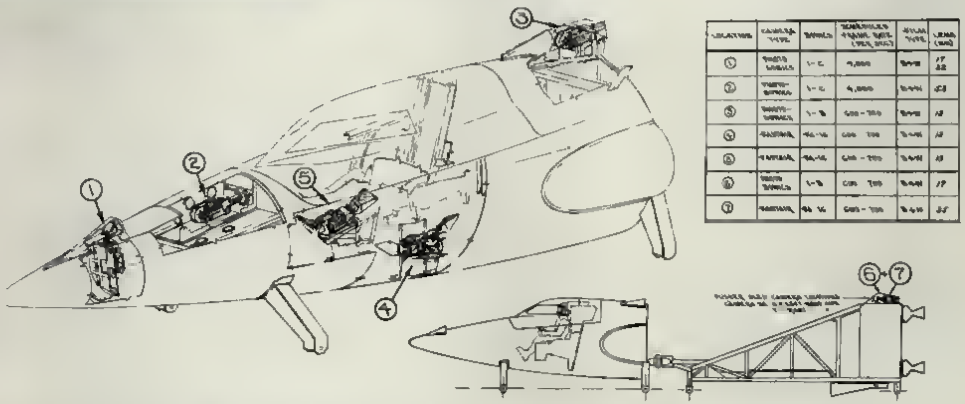

LOCATION	CAMERA TYPE	SPEEDS	TOTAL FILM FOOTAGE	VIEW TYPE	LENS (mm)
①					
②					
③					
④					
⑤					
⑥					
⑦					

FIG 4—Diagram shows sled borne camera locations for seat-ejection tests conducted at the Air Force Flight Test Center at Edwards, Calif. The positions of seven instrumentation cameras of various types are indicated. Camera and film data are shown in chart.

THE FILM EDITOR must make a wide range of decisions. He must judge what footage is good and what is bad; choose between all the possible ways of arranging shots in a sequence; select the most appropriate cutting points; and objectively evaluate his decisions with respect to the total film

THE TECHNIQUES OF CREATIVE FILM EDITING

Great creative opportunity of film art occurs at the editing table; but the editor must work with the pieces of film that has been given him.

AMERICAN CINEMATOGRAPHER IS indebted to Calvin Productions, Inc., Kansas City, Missouri, for the opportunity afforded to reprint a condensation of the series of informative articles on Film Editing which have appeared in recent issues of "The Aperture," the company's monthly workshop publication for 16mm film producers. The series, condensed to a 2-part article, begins on this page. The illustrations have been added to point up some of the salient points in "The Aperture's" treatise.—Editor.

THERE IS A LOT more to film editing than simply splicing scenes together in sequence. For one thing, editing calls for decisions—hundreds of them. Many of the decisions in editing are mechanical, especially when the editing problems have been anticipated in scripting and shooting. Yet, there are often opportunities for selecting and arranging visible and audible reality on the editing table.

Any sequence of pictures has part of its meaning expressed by the order and relative lengths of the individual shots, by the rate of presentation, and by the accompanying sound track. Nevertheless, the actual footage that was shot represents the limiting framework for the editor's creative activity. He can rearrange, shorten, and eliminate scenes. He can make better transitions both from shot to shot, and sequence to sequence; but he must work with the pieces of film that have been given him. Thus, a large share of the responsibility for the successful editing of a film falls to the script writer, the director and to the cinematographer. All three must anticipate the problems that will arise in the final stages of reassembling the fragments of reality.

Many film directors believe it imperative to edit their own films in order to achieve the effects planned during the shooting. By doing both jobs, they are also able to see the mistakes and misjudgments they made in shooting. Most directors, however, achieve a refinement of production technique which enables them to turn over the task of editing to someone else with complete confidence.

Basic Procedures

Let us now consider a practical step-by-step procedure in editing a motion picture film:

First, assemble the work print —splicing together all takes that are related to a given subject, or usable in a given sequence.

Then view this footage and

make mental notes of the best shots, and the shots that should be discarded.

Next, throw out technically-bad footage—any and all that includes edge-flare, reveals unsteady camera, or is marked by unsharp focus or poor composition. (Be sure, however, to save and set aside all deleted scenes which later may have to be used, even if they are poor in quality.)

Now, view the remaining "best" takes, mentally re-organizing them in different order where necessary. To better visualize different combinations, hang the individual scene strips in front of a light box and actually re-arrange them in different combinations.

When the final arrangement has been decided, proceed to find the best points at which to cut from shot to shot. In every case, mark the proposed stopping point of one scene and the tentative starting point of the next, using a grease pencil.

Then, check and re-check to make sure that both shots will cut together well, and that they will contain the desired material after cutting. Then, when entirely satisfied, cut and splice. If several choices of equally good cutting points are available, cut the scenes in "long" at first, re-cutting (trimming and re-splicing) later if necessary.

View the new arrangement and, if satisfied, proceed to add the next shot by the same method of procedure.

DIRECTIONAL CONTINUITY is a key essential in a properly edited motion picture. This means that if the action is established in the initial shot as coming, say, from the left, then all succeeding shots relating to that action must show the actors traveling in the same direction. An incorrect cut from long to medium shot is shown in the two photos immediately above; the correct cut, in the photos above them.

Bringing The Editing To a Finish

"I don't think any editor ever does finish an editing job," a veteran film editor remarked recently. Which is probably true, when one considers that there are always so many possibilities afforded in the editing process that it could be practically endless. There is a time, however, when the decision must be made that "This is it!" and the editing of a film frozen at that point. To reach that point it is necessary to continue editing, thinking in terms of single cuts within sequences, and adding sequence to sequence until the whole film is finally cut together.

After cutting is completed, the next step is indicating on the work

Continued on Page 120

GIVEN A NUMBER OF TAKES of the same or similar action, the film editor must exercise great care in selecting the cut to match the cuts that precede and follow it. Several factors help him determine this: directional continuity in the scene, camera angle, time of day scene was shot, etc. In the three photos above, each was shot at a different time of day, so that the sun's changed position is quite apparent; and one shot was made both at a different time of day and several miles distant from location of shots 1 and 2—although in the same approximate area. Sharp eyes and good judgment are necessary in selecting and cutting such scenes.

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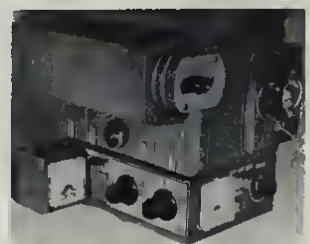

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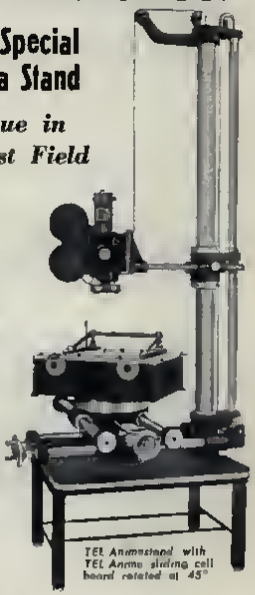

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THE QUESTION OF FOCUS...

EXTREME DEPTH of field was purposely avoided in this scene from Can-Can, photographed in Todd-AO by William Daniels, ASC, in order to concentrate audience attention on players in foreground. Decreasing the light volume on the background area contributed to the result.

Is extreme depth of field desirable? Is yesterday's soft-focus technique passe? Here are some "pros" and "cons" on both techniques as they apply to Hollywood film productions.

DURING THE 30's, one of the most frequently-discussed trends in cinematography was the so-called "pan-focus" system, which involved stopping down the lens to unusually small apertures in order to achieve maximum depth of field. New interest was injected in this technique by Gregg Toland in his photography of the memorable "Citizen Kane."

As with any cinematographic technique, however, Hollywood studio cameramen were divided into two camps—those who were "for it" and those who were "against it." Some held strongly that the technique represented one of the outstanding artistic advances in the art of motion picture photography. Others argued just as strongly that such wiry-sharp photography was something the industry's cinematographers had discarded twenty years before because it tended to make the screen's story-telling technique dangerously static. Still others believed the real answer rested between the two extremes.

Cinematography, it should be remembered, began its existence as a strictly mechanical process of making a photographic record of scenes and objects in motion. It was not until after the turn of the century that it was discovered that motion picture scenes, properly strung together, could serve as a medium for telling a dramatic story. Since then, the history of the cinema has been a constant search for the best way of combining the inherently accurate mechanical record of the camera with the dramatic and emotional values necessary for true story telling.

In the early days, the lenses available for cinematography were not of the best. Neither were film emulsions or laboratory-processing. And as the cinema was just emerging from the mechanical record stage, when the only aim was to get a reasonably good picture on the screen, the ideal of good cinematography became that of getting not only a picture, but a clearly recognizable picture. Detail in every portion of the frame was the dominant goal.

In still-photography, too, it was the day of super-crisp definition. Photography was just emerging from the "rapid rectilinear" era, and the almost unnaturally perfect detail of an anastigmat stopped down to *f*:64 was enticing.

But before long cinematographers and still-camera pictorialists alike began to discern the artistic limitations of this *f*:64 definition. Still photographers commenced to realize that a picture in which you could count every leaf on a tree a hundred yards away showed you *more* than the best eye could hope to see in reality. They discovered that injecting a softer optical quality into the picture made it

IN THIS SCENE from "Damn Yankees," cinematographer Harold Lipstein, ASC, kept focus uniform throughout, which intensified visual effect of the rapid, ecstatic motions of the dancers. Softening of background area was effected through use of vari-colored lighting and light, artificial fog.

THIS SCENE FROM "The Alamo" is good example of how extreme depth of field can enhance the dramatic impact of a scene. By keeping all planes of scene sharp, there is more for the eye to see, thus enhancing the scene's aspect of bigness. "Alamo" was filmed in Todd-AO by William Clothier.

more pleasing, and gave it an artistic feeling none of the *f*:64 school could ever capture.

At the same time, cinematographers, confronted with the task of making the tender and romantic moments of their pictures emotionally moving, also found that softness heightened the pictorial and dramatic value of their scenes. They discovered that flawless definition could tend to exaggerate the two-dimensional flatness of their pictured image on the screen, while softness, especially the sort obtained when using lenses at relatively open apertures, worked hand in hand with lighting to suggest roundness and reality.

So the pendulum began to swing. As the years went on, it swung to an extreme of softness. Look at any picture of fifteen or twenty years ago—still or movie. If it had any pretensions of being an example of good photography, it was almost certain to be an extreme case of "fuzzyography." On the screen especially, scenes of any dramatic value, or closeups of women stars were almost invariably photographed with comparatively "soft" lenses, at maximum aperture, and further softened by strong diffusion implements such as discs, gauzes, and the like—until the result on the screen was very sketchy indeed.

To gain this added softness and roundness, photographers went to great extremes. On exteriors, where ordinarily one would have to stop down to get a normal exposure, neutral density filters and the like were employed which permitted shooting exteriors, as well as interiors, at apertures close to the maximum—*f*:2.5 or thereabouts—in the interests of soft quality and natural roundness. Advocates of the "soft focus" effect plagued the manufacturers for softer gradations in emulsions, and the laboratories for softer quality in their development and printing.

Eventually this trend was carried to extremes, and the pendulum began to swing the other way. Cinematographers began to realize that not all pictures could stand the visually soft treatment. Some—like the gangster stories, and some types of horror pictures—demanded harsher, crisper visual quality. Other stories had a more or less documentary flavor, which demanded camerawork that stressed realism so that the story reached the screen with more the quality of a well-photographed newsreel than of a studio-made production.

In recent years, there has been less tendency for cinematographic innovations to become general industry trends. Thus today, we see both hard and soft focus techniques employed — particularly in the super-widescreen productions. Cinematographers are inclined to fit one or the other technique into their photographic plans according to the photographic system used, the type of story, and whether it is to be filmed in color or black-and-white.

It has been amply demonstrated that in making frequent use of short-focus lenses and abnormally small apertures, extreme depth and definition is gained with a consequent loss of the illusion of roundness which—fully as important as depth or definition—is a necessary factor in achieving the illusion of three-dimensional reality in two-dimensional motion pictures.

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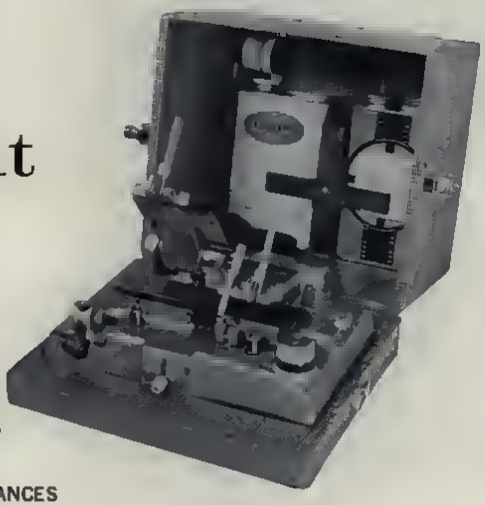

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A Simple Sound Dubbing Method For Magnetic-Stripe Films

By K. H. BARNEY

IT IS OFTEN desirable to dub in pre-recorded dialogue, commentary, music, or all three in the final version of a magnetic sound-on-film subject. This article outlines a simple, quick, and effective method for this, using relatively inexpensive equipment. The method can also be used to handle lip-sync sequences.

Because of its inherent flexibility in matching separately-recorded dialogue with the edited picture, this method provides a means of obtaining natural, professional-sounding performances from persons having little or no previous microphone experience, and, incidentally, eliminates the possibility of annoying pops and clicks in the sound track due to starting and stopping the film or tape recorders during the final recording.

The basic principle of the system follows the line of current methods of editing an optical sound track to match the picture film. However, instead of an optical sound print, a magnetic tape is used. Starting with the edited picture film, a cue tape with accurate sync marks corresponding to the start points of all important scenes or sequences is prepared. The "sound track" tape containing music and/or pre-recorded commentary is next edited to match the cue tape. The "sound track" tape is then re-recorded on the picture film's magnetic sound track mixed with live commentary where desirable.

The basic equipment required to achieve good results consists of a tape recorder and a magnetic sound-on-film projector and need not be expensive. The main requirement for the tape recorder is that it be powered by a synchronous motor so that absolutely constant speed is maintained during recording and re-recording operations. The Roberts Recorder, distributed by Roberts Electronic Corporation, La Brea, California, has been used by this writer with excellent results. The magnetic sound projector must also be driven by a synchronous motor or by a non-synchronous motor controlled by an accurate governor.

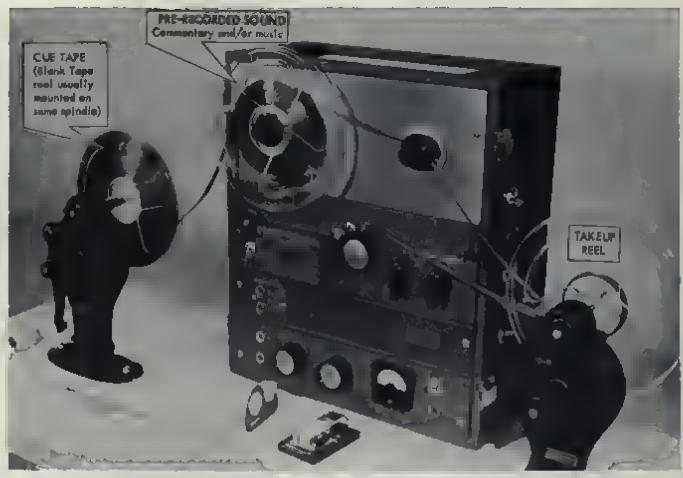

FIG. 1—Typical setup for the preparation of the "sound track" tape in author's sound-dubbing system

In my own work I use a Bell & Howell Model 302 magnetic sound projector. This machine does not have a synchronous motor, but it does run at an extremely constant speed of 23.8 frames per second. The ability of this combination of equipments to maintain sync has been checked repeatedly by recording a short selection of music simultaneously on both, and then playing both recordings back through separate speakers placed next to each other. A very percussive selection was used to obtain an accurate check. The two machines have been found to hold sync for more than two hundred feet of 16mm film at sound speed. By this means any error due to tape slippage or projector speed variation has been found to be negligible.

Short lip sync sequences (5 to 10 seconds duration) can be filmed with an ordinary spring-powered camera provided that its average speed during the take equals that of the projector. This can be checked by running a calibrated length of film first through the projector and then through the camera, or by using a strobotac. Very satisfactory lip sequence results can be achieved under these conditions, even though the speed of the camera may change slightly during a take. However, where extreme accuracy of sync over long time periods is required it is recommended that a synchronous mo-

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EVERETT KELLEY, (kneeling, center) Supervisor of Lockheed's Motion Picture Unit in Burbank, briefs cameramen on scene to be shot. Here the Unit makes use of cabin interior mockup built by Lockheed prior to actual aircraft production. Such mockups are not especially built for film work, but lend themselves nicely to obtaining shots not possible in actual airplanes.

Upgroding production personnel from within campany ranks hos praven successful in develaping a top-notch staff for

LOCKHEED'S MOTION PICTURE UNIT

By CHARLES LORING

THE IN-PLANT motion picture production unit at Lockheed Aircraft Corporation, Burbank, California, may not be the largest in the industry, but it has an enviable record for turning out some highly effective training and public relations films. The smooth-functioning organization produces a steady program of thoroughly professional films that meet a wide range of company needs.

The company's in-plant film unit long ago established and continues to maintain the highest standards of professional quality in the films which it produces. This is further attested by awards which the company film unit has received in annual competitions conducted by the Industry Film Producers' Association, Los Angeles. In 1959, it was honored with an award for "Electra Propulsion Story," and in 1960 with a second IFPA Award for "From The Smallest," a technical film report on the Lockheed Electra. A likely contender this year is "Of Men and Stars," an institutional film in 16mm color.

The need to train hundreds of unskilled workers on an expedited basis during the World War II years led Lockheed Aircraft Corporation's California Division at Burbank to set up the company's first in-plant motion picture production unit. Here were turned out training and work-simplification films that served a vital need in the company's wartime production effort.

In the transitional period from war to peace-time aircraft production, film making activities were curtailed. The company's present in-plant film unit came into existance, somewhat modestly, in 1947 when Everett Kelley, the unit's present head, re-established the Lockheed Motion Picture Unit. A one-man operation, the unit—or, we should say, Kelley—performed the directing, camera work, and editing, and guided the script writing in cooperation with the various departments requisition-

SHOOTING INSIDE hangar areas presents lighting problems, and here reflectors re-direct sunlight into the hangar for color photography. Nearly all Lockheed films are produced in 16mm Ektachrome

ALTHOUGH MOST films produced at Lockheed are of the narrative type, the film unit is equipped to shoot lip-sync whenever the script calls for it. Double system sound techniques are used.

ing a film production. From this modest beginning, the production of one film led to another and in due time the company management became convinced of the importance of motion pictures in promoting the company's products and as an effective public relations medium. Lockheed's motion picture program was expanded, Everett Kelley became supervisor, and the unit's working staff enlarged.

HERE IN A special "break-away" cockpit mockup, cameraman takes light reading prior to shooting scene for a pilot indoctrination film. Use of mockup permitted camera angles not possible in cockpit of real plane. Lighting was planned to approximate actual daylight

In 1954, when the need arose for establishing motion picture units in Lockheed's newly-formed Missile System Division and also at its Georgia Division, personnel from the Burbank unit were transferred and promoted to these divisions. Today, they carry on comparable film production programs. In 1957, the company's motion picture production personnel reached a total of fourteen: group supervisor, production supervisor, five cameramen-editors, a clerk and—within the Sales Promotion department — a film coordinator, three script writers, an expeditor and a clerk. Today, as a result of economy measures in the California Division, the number of personnel in film activities has been reduced to nine.

Lockheed's California Division's film unit acquired new and larger quarters in 1957, which covered 2,500 square feet of working space. The new quarters provided five individual editing rooms, 6′ by 10′ in size—one for each of the Unit's cameramen-editors. Each room is furnished with basic editing equipment such as Hollywood Film Co. metal editing benches, Moviola rewinds, Moviescop "between the rewinds" type film viewer, Moviola magnetic sound reader, Moviola four-channel synchronizer, Bell & Howell 16mm/35mm professional portable hot splicer, a film bin, and a film storage cabinet. A standard 16mm Moviola is shared by the group. When the work load demands additional equipment, it is rented as required. Otherwise, the Unit's film editing facilities are quite modern and complete, and provide an efficient base for its film editing work.

Standard professional techniques and practices are pretty much adhered to in the course of film editing — from color work print through final assembly of original "A" and "B" rolls. Depending on the degree of complexity of the film production and the production values desired, a Lockheed film may involve, in addition to a basic narrative track, the editing of "A" and "B" music tracks, "A", "B" and "C" sound effects

Continued on Page 116

WHAT IS COLOR CORRECTION?

When a film is to be given scene-to-scene color correction by the laboratory, the individual scenes must be judged not only for density, but also for color balance. This involves the judgment of an experienced color timer, the use of specialized equipment, and setting up separate control strips for the printer.

THE IMPORTANCE of color correction in the process of printing or duplicating color films is something not to well understood by many who photograph and produce 16mm color motion pictures.

"Apparently the term means different things to different people," suggests *General Film Rewind* in its December, 1960, issue from which the following information is excerpted:

The University Film Producers Association Nomenclature Committee in its listing of "16mm Terms" (Journal of the UFPA, Winter, 1960, issue) gives the following definition:

Color Correction:—1: Alteration of tonal values of colored objects or images by the use of light filters, either with the camera or printer. 2: Lens design which corrects chromatic aberration.

Color correction doesn't pose too much of a problem in 35mm color work, the *Rewind* points out; the confusion centers on 16mm color—probably because of the different materials, and therefore, different process which are involved.

In 35mm, the article explains, a color negative is exposed from which 35mm color positives are made—either release prints or an interpositive from which is made the 35mm color internegative. To correct color, each scene is judged against a norm, with a color timer actually viewing how the scene would appear with the normal printing light, and with changes in color achieved by varying the proportion of the three primary colors. The color corrections, or changes, are then achieved in printing a positive direct from the camera negative This system works rather well, and there is little occasion for review of the results.

However, in 16mm color we have quite a different situation. First, the film exposed in the camera is a color reversal-positive, such as Eastman Kodak's Ektachrome 16mm film. The selected scenes of the processed camera film are usually edited in A&B rolls, to set up for the use of fades and dissolves in printing. From the edited A&B rolls may be made 1) direct reversal color prints, or 2) a 16mm color internegative to be used in making color positive prints.* In the first method, both camera and dupe stock are similar. In the second method the negative-positive color duplicating stock is basically different from the reversal camera stock.

Color correction in 16mm film printing is accomplished by the same basic method as in 35mm —by varying the proportion of light from the three primary colors.

So, where does the confusion come in?

Continued on Page 106

A COLOR DENSITOMETER is used in analyzing color film to determine what color correction, if any, is required. The Ansco Color Densitometer, pictured at left, can be adapted to a variety of laboratory uses and can distinguish color differences too small to be detected by the human eye

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WHAT IS COLOR CORRECTION?

Continued from Page 104

On three different points—the mechanical method (How is it done?), the process (What is accomplished?), and on cost (Why does it cost more?).

First, method—How is it done?

The color may be altered, between original film and dupe, by either of two basic methods—known as "subtractive color printing" and "additive color printing." The former utilizes a single light source in the printer, and the color is varied by the insertion of a filter in the light path. In effect, the filter serves to screen out, or subtract undesirable color variations in the print. If the scene to be printed is too red, the filter will reduce the red values in the normal printing light, allowing more blue and green to come through.

Additive color printing utilizes three separate light sources, each representing one of the primary colors. By varying the quantity of light from each of the three beams, a new "color mixture" is achieved in the light exposing the dupe stock, and the color tone or separate color content is thus varied within the scene.

Both subtractive and additive systems are used, and each can do a satisfactory job. However, it is generally believed that the additive method provides a greater degree of control.

Next, process—What is accomplished?

This is the area of greatest confusion for users of 16mm color film—both as regards just what is done, and how this affects the print. Each of the following operations has been referred to as involving color correction:

1. Normal timing (measuring of the over- or under-exposure of each scene), and alteration of the volume of the printer light during the printing process to lighten dark scenes, darken light scenes. The purpose is to achieve a more even exposure of the scenes in the print, and professional timing does result in a better looking print. But, it is not intended to alter color tones in printing.
2. The use of a single filter in printing a show edited from one emulsion, as recommended by the film manufacturer or indicated by laboratory tests, to achieve more normal and desirable over-all color balance in the print.
3. The use of a filter, or filters, to change the color duplication of a few scenes which are noticeably off-color (usually resulting from exposing daylight film with artificial light, or vice versa, or similar camera errors). This may involve one to a half dozen or so scenes, scattered throughout the edited roll.
4. The use of filtered light in printing to affect the color duplication of every scene in the edited film. This is "scene-to-scene" color correction—each scene being "read" or judged for color in the same manner it is read or judged for density.

Now, only two of these operations involve color correction. Number 3 might be termed "problem scene color correction." Only Number 4 is color correction in the professional sense—a scene-by-scene judging of color balance, with the necessary changes made in the additive color printer to achieve a smoothly balanced print.

Obviously, the results achieved will vary with the type of handling, as outlined above. This is one reason why opinions vary so in the 16mm field—we use the term "color correction" in referring to different methods.

This brings us directly to the cost factor—why does it cost more? Here, again, it depends on which of the methods we are considering. There's no additional charge involved in normal timing of prints, with the resultant variation of the quantity of printer light utilized on printing the different scenes. As mentioned above, the only purpose of this light adjustment is to darken light scenes and lighten dark scenes. Usually the service of preparing for and doing this normal type of release printing is included in the listed price of the print. (In the making of 16mm color workprints, there's a small additional charge for making a timed color workprint, as compared with the price of a one light color workprint.)

Similarly, most film labs make no additional charge where a single filter is used in a printer to affect the overall beginning-to-end length of the print. This is a normal requirement, included in the usual price of a print.

When laboratories encounter what they call "problem scene color correction," this involves special handling and additional work usually involves additional cost. It's possible to set up a printer to vary the color balance of the printing light only for the specific problem scenes, but this requires almost as much time as setting up for color timing of each individual scene. It also requires the use of a specialized additive color printer, which is much slower in operation than a standard production printer. The laboratory has two options—omit any charge and absorb the additional cost, or charge on the same basis as for a fully color corrected print.

Fortunately, there's another simpler and less expensive method for accomplishing the same end-result, if the producer is aware of this possibility and edits his film accordingly. The problem scenes which require similar

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"THE FREQUENT USE of reestablishing shots is necessary to refresh the audience's memory of the scene . . . It is a continuity truism that an audience, always looking ahead to what is coming, rarely keeps in mind more than one scene prior to the one it is looking at. It must periodically be reminded of how a small scene fits into the larger scene that includes it.

"Remember that the human eye unconsciously refuses to look at too many closeups in succession, and reorients itself every now and then by a quick look around. Let your camera do likewise for your audience by frequently reestablishing the scene, otherwise confusion may kill interest.

"You reestablish, therefore, not only to tie sequences together, but also to keep your audience from getting lost."—*Arthur L. Gaskill and David A. Englander in "Pictorial Continuity." (Duell, Sloan & Pearce, Inc., New York, N. Y.)*

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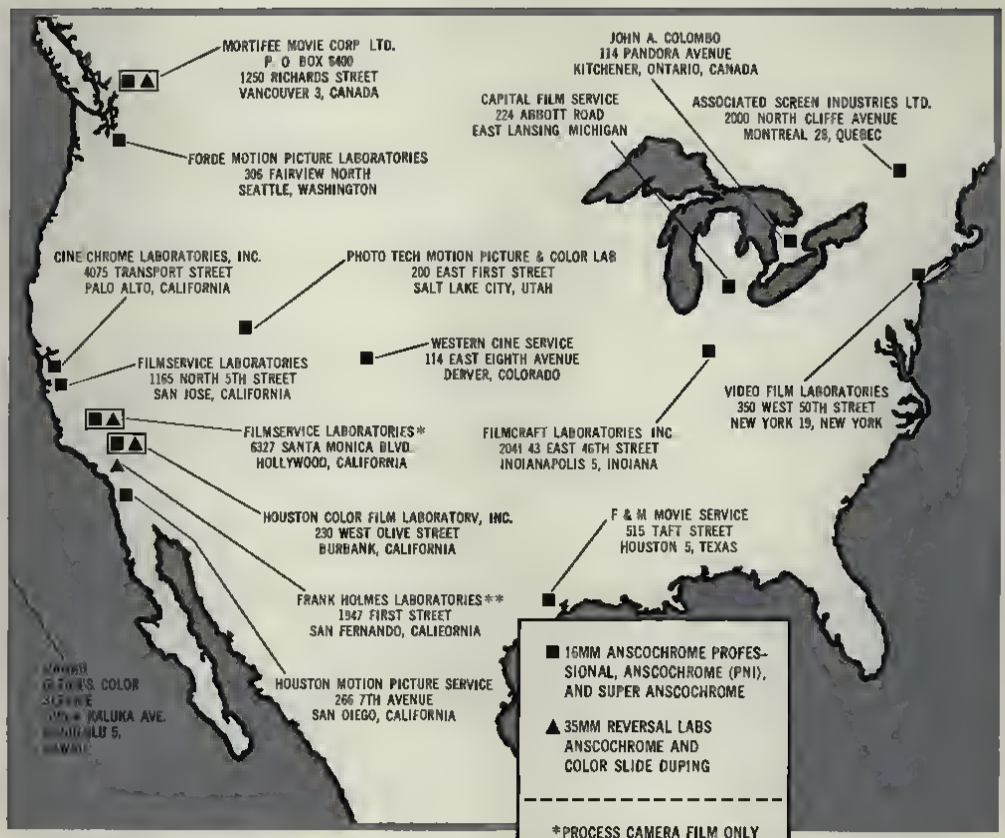

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color correction may all be edited on a third or "C" printing roll. This permits the use of a single filter to achieve the desired color balance for that roll and the print is charged for on AB&C roll basis—considerably less than the cost of A&B roll scene-to-scene color correction

When a film is to be set up for scene-to-scene color correction, the individual scenes must be judged, not only for density (involving the total quantity of light to be used in printing), but also for color balance (involving the choice and preparation of the primary color mixture to be used in printing). This involves the judgment of an experienced color timer, the use of specialized equipment, and the setting up of separate control strips for the printer. Then, the edited film rolls are put on an additive color printer, which is considerably slower in operation than standard production printers Time is the basic cost factor in any business operation, so slower speed in printing means increased cost of production.

Since motion picture printing is a combination of science, art, and personnel opinion, the making of a fully satisfactory color-corrected print may be achieved with the first print, or it may not It's entirely possible that two, three or more prints may have to be made where originals involve difficult color-correction problems. Obviously, this, too, adds to the basic costs involved.

Thus far we have been discussing color-correcting the 16mm color reversal print made from a 16mm color reversal original. The same basic factors are involved when the color reversal originals are to be translated into a 16mm color internegative for color positive release printing. Since the color systems are somewhat different, the results of color correction may vary That is, the same filter that produced a desirable result from a scene reproduced on color reversal film may not provide a satisfactory result in a color positive print. If not, there are two alternative laboratory procedures possible. Either start all over again and make a new color internegative, or introduce color timing in printing from the existing color internegative. Each procedure involves cost. If a new internegative is made, the costs involved are raw stock, labor, and overhead. If the same internegative is to be used, with additional color correction to be made in printing, the printing speed factor again enters—since the internegative must be taken off the faster production printer and put on the slower color-correction printer.

"In our experience," says General Film Laboratories," "35mm color negative clearly requires color-correction, and correcting of color is an apparently stable and satisfactory process The well-exposed 16mm color reversal original film does not require color-correction, except for the occasional problem scene To judge by the requirements and requests of customers, color correction is standard in 35mm work, but little required in 16mm work. However, like so many occasional requirements, 16mm color-correction is a lifesaver when you really need it!"

*Also possible to make a 16mm color reversal master from which contact second generation prints can be made. However, this method is little used now that 16mm color internegative-positive process is available—except for special purpose requirements. ■

CAMERAS ON HOT SEAT

Continued from Page 93

(without film magazines) are shown in position to record vital information during a test run of the rocket sled One camera is focused on the sled's operational equipment while the other records the seat during the ejection operation A third camera of the same type is situated at a lower elevation to record function of the sled and ejector operational devices

The straightaway track, over which the rocket-propelled sleds travel during the tests, is 4 1 miles in length In addition to the motion picture coverage of tests obtained by the sled-borne cameras and the cameras situated at intervals parallel to the track, other cameras are mounted on an overhead boom extending from a tower erected at one point close to the tracks. The boom extends out over the tracks, thus providing a straightaway view of the rocket sled in action

Also at China Lake, NOTS' engineers have developed a timing and control unit for the instrumentation cameras that uses small pyrotechnic squibs produced by Atlas Powder Company. Previously, cameras were started and other events were initiated by the moving sled breaking carbon rods or cutting charged copper wire screen boxes placed along the side of the track. The new unit has proven to be very reliable in operation and handles heavier power loads than were possible under previous methods. This installation is used in conjunction with the technique developed at NOTS of operating high-speed prism cameras at very slow speeds prior to the start of the run, so that inertia of the camera drive is overcome when full power is applied during the run.

Still another innovation developed by NOTS' engineers is the use of the new Sylvania long-duration flash bulb to illuminate cockpit interiors for high-speed photography during seat-ejection tests. In a typical camera set-up a Photosonics 16mm-1B high-speed camera was used mounted low in the cockpit. The camera was equipped with a 200-ft film magazine, and the flash bulbs, backed with tinfoil reflectors, were mounted at either side of and just above the axis of the camera lens.

With the camera thus mounted in-

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.60	25%	4 0	2
.70	20%	5 0	2¼
80	15%	6 7	2½+
.90	13%	7 7	3
1 00	10%	10 0	3¼

When employing neutral density filters as partial filters to hold back only the hot portions of a scene, first read the normal part of the scene and then the part that will be filtered. Then choose a density that corresponds to the difference in exposure. With the filter in position the entire scene can be recorded with the normal exposure

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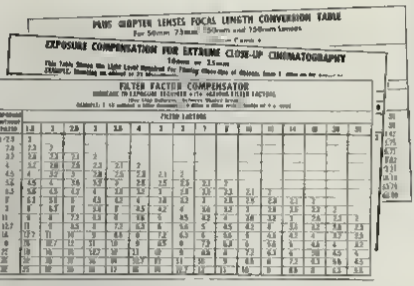
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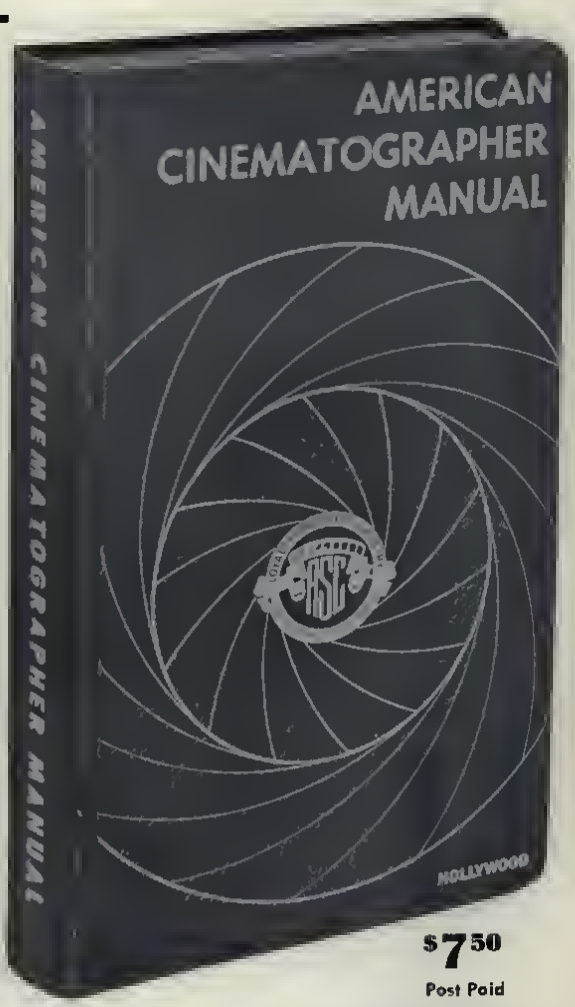

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side the cockpit of a rocket sled, wide-angle lenses are used to show the dummy and seat during ejection. Some test runs have been made using intermittent cameras with the Traid 720 Peripboto lens, which takes in a 165° field of view.

In tests of target drone aircraft on the B-4 rocket track at NOTS, Photo-Sonics 16mm-1B high-speed rotating prism cameras were mounted on outrigger arms.

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The editors extend their appreciation to Traid Corporation, Encino, Calif., in whose publication, *Traid Techniques* (February, 1960), some of the foregoing material appeared.

FILMING "EXODUS" IN SUPER-PANAVISION 70

Continued from Page 91

times strained to the warping point. As, for example, in the sequence showing the interrogation of the young rebel, Dov Landau. The locale was a cave that had been converted into a plant for processing peanuts. After the machinery was moved out all that remained was a few sticks of furniture and the original rock walls. The schedule called for another 360° pan, but there was no place to mount the lamps where they would be out of camera range. Leavitt solved the problem by placing his lights on stands and painting the stands to blend in with the background. Where this blending was not possible he hung coats and other articles over the stands to serve as camouflage as the camera swept by to follow the circular pattern of the action.

Cramped quarters became the order of the day as the Panavision cameras moved into varying tiny areas called for in the script. The smallest interior, permitting barely enough room for the actors, the camera and the director, was a room at Kafr Kana where Eva Marie Saint nursed the wounded Paul Newman. In scenes like this Leavitt had to make do with only one light—a neat trick when one is trying to maintain separation from the background and also achieve photography with a professional finish.

Another tight spot was a second floor cubicle opening onto a balcony from which Sal Mineo flees into an Abyssinian church to avoid capture. To film this scene, the camera started inside the room and dolled onto the balcony and around a corner as the actor dashed out and down a stairway. It was a fast move, further complicated by the fact that the action moved from interior to exterior with a wide discrepancy both in light quality and intensity. The one assistant cameraman who was able to squeeze himself around the camera as it whipped out onto the narrow balcony was very busy following focus from three feet to infinity, so it was impossible to vary the shutter to compensate for the difference in light. All Leavitt could do was split the exposure and pray that the latitude of the film and the magic of the lab could somehow equalize the exposure. Luckily they could and did.

The interior of the Abyssinian church presented a different set of problems. This was sacred ground and the priests, while friendly and cooperative, would not permit any violation of their sanctum sanctorum. This meant that no lights could be hung or even placed on stands within the sanctified area, so they were mounted outside and beamed in. The

SAM LEAVITT, ASC

Won "Oscar" in 1956 for photography of "The Defiant Ones." "Exodus" is fifth picture he has photographed for Otto Preminger. It proved the most challenging of all.

action within this church is a prolonged cat-and-mouse chase and Preminger played it all in one scene with a multitude of camera stops

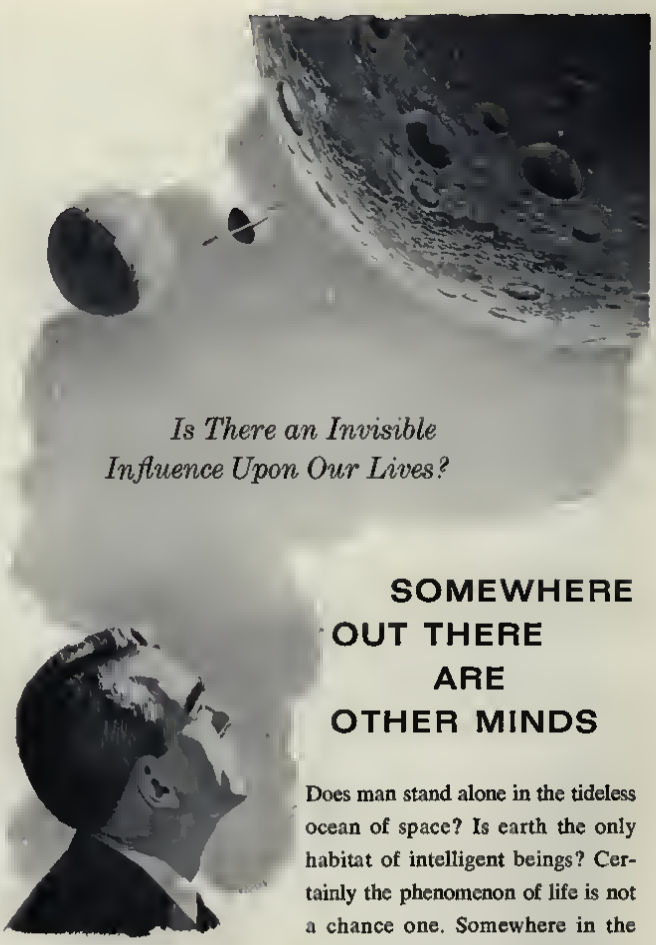
The problem of mixing and balancing interior and exterior light was a constant one during filming. Often interior scenes would be played against windows opening onto dazzling exterior backgrounds. Or the camera would pick up an actor indoors and follow him outdoors in one continuous shot. Many times the interior light would call for an exposure of f/3 while the exterior was a blazing f/11—but only rarely was it possible to place amber gelatins over windows or doorways to balance intensity and color temperature. How Leavitt accomplished the balancing of such scenes remains his secret, but manage he did.

For example, a scene in the King David Hotel called for the camera to pick up an actor at the entrance and pan him across the entire lobby to glass doors at the opposite end opening on to a patio It was impossible to scrim the entrance with colored gelatins, so Leavitt placed blue filters over the incandescent lighting units to balance their color temperature with that of sunlight This cut the interior exposure to f/4 while the exterior remained a bright f/11.

Photographing the dramatic bunger-strike sequence aboard the refugee-packed ship *Exodus* at Haifa Harbor was another triumph of realism over the impossible. Instead of "cheating" the situation by anchoring the ship alongside a wharf, which would have provided a spacious platform, all shooting was done with the ship anchored in mid-channel, just as it was during the actual incident. This meant shooting the sequence with the camera at the very edge of the wharf railing. Subsequent shooting also took place in tiny cabins and in radio shacks, with the camera wedged right up against the wall. Had it not been for the 37mm wide-angle Panavision lens, such shots could never have been made at all.

The action high-point of the film is the exciting re-enactment of the prison break, which actually occurred on May 4, 1947 when the Irgun—the Israeli underground organization—audaciously blasted open the walls of the former Cruasder fortress at Acre, now a hospital, freeing a group of its own condemned leaders and

Continued on Page 113



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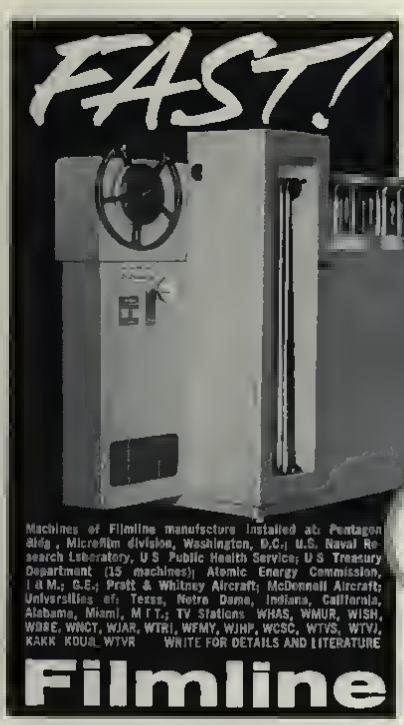
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FILMING "EXODUS"

Continued from Page 111

about 200 other prisoners. The film crew had to work around the business-as-usual schedule of the hospital, which was loaded with patients at the time. Its ancient walls and winding corridors were lighted by lamps stuck in holes and mounted on ledges wherever space would permit. Much of the lighting and camera equipment was too large to go through the narrow entrances and had to be hauled up four stories by means of cables and lifts. The explosion which liberates the prisoners was the real thing; the walls of the fortress were actually dynamited for the picture. Since this was obviously a "one-take" situation, Leavitt mounted one camera outside the wall and the other inside so that reverse angles could be shot of the prisoners pouring through the gap immediately after the explosion. This sequence, from the standpoint of both action and photography, is a masterpiece of suspense.

The automobile chase following the jail break is another "impossible"

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sequence which ended up in fine shape on film. If shot in a studio, such a sequence would have been filmed using mock-up cars placed in front of a process screen upon which, by means of rear projection, an appropriate moving background would be projected. The lighting would be carefully controlled and varied to simulate movement.

The sequence, as filmed for "Exodus," does not have the benefit of such fripperies. Instead, the camera (with its operator and *one* light was mounted on the hood of a stock automobile, which was then driven headlong down a winding road as British soldiers fired upon it. There was no mock-up, no process screen. The camera operator clung to the hood as real bullets came whizzing through the rear window. Then the camera was mounted in the back seat and the entire action was repeated to get reverse-angle shots, with the camera shooting past the three passengers and through the windshield. The final result is as smooth as anything ever shot on the sound stage—and certainly more exciting.

One of the trickiest sequences to photograph was that filmed at dusk on the open air terrace of the King David Hotel. The scene begins on a couple seated at a dimly-lit bar. Then the camera pans with a waiter as he crosses the terrace to serve the two players seated at a table against the sunset. Again, such a scene would have been simple if filmed in the studio before a process screen. But the real-life sunset would only hold still ideally for about five minutes—just barely long enough to permit photographing the opening action and the exchange of dialogue that followed. When the reverse angle of the same scene was shot the following evening the light was of an entirely different character, but the Technicolor laboratory managed to match the two very well.

In keeping with the realism-above-all approach of the film, all night sequences were actually filmed at night, posing lighting problems almost beyond belief. Contributing to the difficulty was the fact that a great many scenes (even the closeups) were shot with the 37mm Panavision extreme wide-angle lens in order to produce the desired pictorial scope to the filmization. Since this lens covers an angle of 70°, even closeups revealed a vast area of background which, of course, had to be lighted. One scene of the "don't-know-how-you-got-it" category begins with Paul Newman swimming toward shore. The camera pans him around (180°) to where a confederate awaits him. In the background can be seen a long sweep of cliffs and a road stretching away to infinity. In order to pick up details of this background lights had to be laboriously concealed among the rocks and so placed to illuminate various planes of the street.

Similarly, in scenes showing the night evacuation of Israeli children from their besieged village, wide areas of countryside had to be lighted. The rugged terrain made it impossible to move the lights in close. Instead, they had to be mounted high up on a hill top, and produced just barely enough light to produce a satisfactory image. In order to squeeze every possible foot-candle of light from the available lighting equipment, Leavitt removed the Y-1 filters from his lamps. The resultant light understandably registers a bit blue on color film, but it came through in this instance to produce a very convincing moonlight effect.

The real acid test of lighting, however, came during the filming of a night sequence showing 45,000 Israelis packed into a square awaiting news of the U.N. partition of Palestine. To make matters more complicated the scene was shot from inside a hotel room with action going on in the foreground. To illuminate this vast crowd, Leavitt used every light unit he could get his hands on, and created a sequence of rich dramatic impact and visual mood.

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Unlike many cameramen who achieve their best results through detailed pre-planning, Sam Leavitt favors an approach which might strike many as being amazingly casual. "I never think the night before about the scenes I'm going to shoot the next day," he explains. "I like to walk on the set in the morning when I get a fresh idea of what I want to do. The results seem more spontaneous that way—though I must admit it takes some quick thinking to keep from holding up the company while you're figuring it out."

Leavitt, winner of the 1958 Academy award for black-and-white photography of "The Defiant Ones," is notably a modest man. In shrugging off his achievement in photographing "Exodus" under conditions which others might consider impossible, he reminds one of the Bumble Bee, which, according to aerodynamic laws, couldn't possibly fly—but since no one ever told him so, he just goes right on doing it. ■

QUESTION OF FOCUS

Continued from Page 99

In this straining for exaggerated focal depth, there is definite danger of overlooking one of the basic factors which makes the screen so powerful dramatically: its selectivity. In the pioneer movies, as on the stage, the story was told from one angle only—that of the long shot. Intimate action had to be put over with sledge-hammer blows, or it would be lost. It often was, anyway, because some inadvertent motion, or even tonal contrast elsewhere in the field of view attracted audience-attention at the wrong moment.

But as screen technique developed, it was found that by bringing the camera closer to the person or object, which was for the moment the center of dramatic interest, the audience's attention could be focused sharply on that one detail, excluding all others.

A very important factor in making this possible is what some people have called a basic weakness of photography: the fact that lenses normally do not have perfect depth of field. In the long-shots, for instance, a star may have a whole room full of people behind her. In this angle, the normal lens' natural depth of field would show

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them quite properly behind her, well defined. But in the closer shots, as the lens was brought to closer focus, and probably a longer-focus objective utilized, the depth of field would not normally be sufficient to show this background in equally perfect focus with the star.

Far from being a dramatic liability, this proved a dramatic asset. In the close shot, the interest is on the star; the background is dramatically subordinate, for the moment, at least. Normal photographic technique makes it visually subordinate, as well. It should be a dominant aim in all cinematography to keep it so in the interest of effective story-telling.

This is fully in keeping with the realistic effect, also. When you are standing close to a person with whom you are talking—close enough so that you see him in closeup angle—if your attention is really centered on that person, you cannot be aware of the details of the background. Your eye perceives the general pattern, of course; but it is a soft, rather out-of-focus pattern. You cannot consciously perceive its details unless you definitely take your eyes — and your attention—from your companion.

There are occasions, of course, when, for dramatic effect, it may be necessary to show a player in a close shot, and at the same time show a well-defined image of some significant background-action in relation to him. But with the exception of a comparatively rare story like "Citizen Kane," which was planned for filming with just this treatment in mind, we can conclude that such occasions are well in the minority.

One of Hollywood's foremost directors of photography has said: "One cannot lay down any all-embracing laws as to what does or does not constitute good cinematography. Not only the immediate visual effect of any scene, but its dramatic relation to story and action must enter into determining this. What is good camera-work under some circumstances, may be bad under others.

"To me, the really significant aspect of the modern increased-depth technique is not the rather obvious fact that, by making use of modern objectives, lighting and emulsions, we can obtain a depth of field impossible by the conventional method of using today's fast lenses at full aperture. It is, instead, that it has given us something

ADVANTAGES OF VARIABLE SHUTTER

When shooting fast action, especially where objects travel directly across the camera field and are being photographed by a static camera, reducing the opening of the variable shutter blades automatically increases the shutter speed and there is less time, because of the shortened exposure interval, for the subject to move and blurr individual frames of film. The result is sharper detail and brilliant "stop-action" shots.

Depth of-field control is still another important advantage of the variable shutter. For example, to reduce sharpness of an objectionable background in a scene while at the same time keeping the foreground images sharp usually requires opening up the lens diaphragm. Obviously, this means admitting more light to the film. To compensate, the shutter opening is decreased.

which rounds out our assortment of artistic tools, so that we have a better way of meeting the dramatic requirements of any story-situation. Let us hope that if the pendulum of cinematographic style swings back again toward increased softness, we will not forget this technique. For when we begin to believe there is only one way to photograph a scene, regardless of its mood and action, we're in danger of losing the varied approach to varied conditions which makes cinematography an art, rather than a process of mere mechanical reproduction. ■

LOCKHEED FILM UNIT

Continued from Page 103

tracks, and the assembly of "A", "B" and "C" original picture rolls to achieve the desired final release print results. Standard black leader "checkerboard" technique is used for assembling "A" and "B" rolls. 16mm magnetic stock is used for all sound tracks, culminating into a dubbed composite mag track from which a B-wind negative is made for release printing. In addition to the editing rooms described above, there are also a shooting stage with a sound control room, a combination theater and conference room and an office area for supervisory and clerical functions. An important facility, also, is a fireproof vault where is stored thousands of feet of original footage. A clerk-librarian works full time indexing and maintaining records of this footage, some of which dates back over twenty years in Lockheed history.

The shooting stage measures 32 x 39 feet and has an "L" shape set erected to represent a typical modern office or conference room. This is adaptable to simple alterations to meet varied shooting requirements. The stage area will accommodate a camera field 13 feet wide by 10 feet high when a 25mm lens is used. The stage was originally designed to accommodate sound recording requirements, but because of budgetary limitations it was never fully sound-proofed. Hopefully, budget permitting, this will be accomplished in the near future along with a fully-equipped control room. Limited sound recording has been done on the stage, but high noise levels at present discourage normal sound film recording. When the need arises for shooting sync-sound, vendor facilities in Hollywood are rented to achieve optimum results. At the present time all narration recording, music and dubbing requirements are handled at rental facilities such as CineSound.

Because of the nature of Lockheed California Division's activities most shooting and sound recording assignments take place away from the plant and thus the requirements for sound stage facilities are not as great as in other fields of film production.

In equipment, the Motion Picture Unit is geared to meet most job requirements and has rental purchase orders to obtain, on short notice, additional equipment to supplement its own, when necessary. Basic lighting equipment consists of ten 2000-watt junior type lights, seven 2000-watt newsreel-type floods, four baby spots and four outdoor reflectors with stands. The lighting equipment is used both on the stage and throughout the plant. A 22 500-watt capacity transformer handles most lighting requirements and can be reasonably transported into the field for location work.

With the new Ektachrome ER film the trend has been to shoot more and more under existing light conditions with little or no supplementary lights. This film allows shooting in low-level light areas throughout the plant and minimizes lighting problems with satisfactory picture quality.

Cine Special and 16mm Arriflex cameras are standard equipment for the Motion Picture Unit and are used for most of its production work. The Unit has two Arriflex cameras complete with accessories, including a sound blimp, also five Cine Special II camera outfits. Each of the Unit's cameramen has his own camera assigned to him and is responsible for its upkeep.

Photographing with high-speed motion picture cameras the many and varied tests conducted by Lockheed in the development of aircraft today is a vital function of the company's Motion Picture Unit. For this area of its work the Unit has two Eastman high-speed cameras capable of 3,000 frames per second and two Fastax high-speed cameras with 8,000 frame per second capability. In the medium speed range, two Traid 200 FPS cameras are used. For remote camera operation, especially in hazardous areas, the Unit has two Bell & Howell Filmo 70DLs for this purpose. To supplement its own complement of equipment for broader coverage of events and tests, the Unit rents additional camera equipment and has special purchase orders set up to procure needed equipment on short notice. This allows a high degree of flexibility in operations and eliminates expensive capital equipment expenditures. For film sound recording, the unit has one 16mm Magnasync model 602 sound recorder and a Norelco ¼" tape recorder. Both recorders are portable and suited to Unit operations where recording must be done in the field. The Magnasync serves multiple needs in sound work. It is used for sound stage dialog work, dialog and sound effects recording in the field, and can be interlocked with the projector for reviewing work print and sound track. The Norelco is used primarily for recording sound effects such as aircraft engine sounds, etc. From the ¼-inch tape, the effects are re-recorded to 16mm magnetic stock for editing into sound effects rolls.

Each member of the Motion Picture Unit has been upgraded from within the company's Photographic and Reproduction Department, and most of them have had some previous motion picture experience. All are expected to keep abreast of latest film making techniques and hence every member is encouraged to attend the motion picture courses at University of Southern California, and at U. C.

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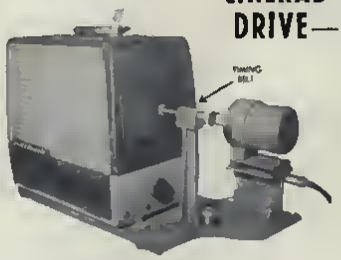

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Versatility Essential

Lockheed's Motion Picture Unit shooting operations are invariably varied and challenging, and consequently each cameraman's assignments embrace a wide field of subjects and activities unique to the aircraft industry. For example, in the course of his assignments a Unit cameraman may perform in the conventional role of production cinematographer, working with a crew and a director, and shooting to script. Or he may be assigned to a project where he will work entirely on his own and away from home base. He is experienced in operating a variety of motion picture cameras ranging from the Cine Special and the Arriflex to the high-speed jobs that can expose pictures at 8,000 frames per second. He can do a professional lighting job on stage sets or location. He's a sound man, a newsreel cameraman, an aerial cameraman, and finally he's a film editor. In all, a well-rounded technician capable of covering a lot of ground.

During a recent Air Force Weapons meet, in which Lockheed F-104's participated, the Motion Picture Unit's cameramen were given assignments to get the most dramatic film coverage possible of the F-104's in gunnery and bomb-dropping maneuvers. As a part of this coverage, it was decided to get a target viewpoint by mounting a camera so it would record the target, and the F-104 flying in, dropping a bomb, and the bomb crashing through the target. The possible obliteration of the camera during this operation was a calculated risk.

A Bell & Howell 70DL with 24 volt motor was chosen for the job and a power cable was strung out to a safe distance to permit remote starting and stopping of the camera. The risk paid off with highly dramatic shots, and the camera came through the bombing operations little worse for the wear.

Following this success, the film unit ventured further—this time to remotely cover from the target area a series of low-level napalm bomb drops from fast flying F-104's. The napalm bomb is a potent incendiary explosive, when it hits it spreads a huge, devastating flame over a wide area. It was imperative, therefore to mount the camera where there was a good chance for it to survive the effect of these bombs.

On the first run, the pilot was off target and toward the camera. The bomb flame engulfed camera and tripod, and although camera and lens were salvaged, the film was a total loss.

On another occasion, high-speed cameras were mounted in close proximity to a target drone explosive destruction test to obtain closeup pictures. In this instance, all the cameras operated perfectly with consequent outstanding picture results. The only damage suffered by the equipment was a severed power cable, caused by a piece of flying debris—an accident which fortunately occurred after the cameras had recorded the important footage. Cameras are an item considered expendable, and the Lockheed Motion Picture Unit will always take a calculated risk if there's a chance that the resulting film will pay off in important data or in an outstanding dramatic shot for picture impact.

"How-to-do-it" Films Produced

The activities of the unit are divided into two main categories. (1) routine or standard operating procedures, and (2) special projects. In the first category fall the group of indoctrination films made to accompany each new model of Lockheed aircraft. When the first squadron of a military command receives its planes, it simultaneously receives a kit of films calculated to thoroughly familiarize pilots and ground personnel with the operation of the aircraft. These are basically how-to-do-it pictures dealing separately with normal flight operations, emergency flight procedures and ground crew maintenance.

As part of its routine operation the unit maintains constant camera coverage of engineering tests shot purely for data purposes. It also provides on-the-spot coverage for the Public Relations Department of every Lockheed activity of news value that might also prove of interest to a general audience—such as the first flight of a new air-

craft model or the visit of an important personage to the plant. Such footage is immediately processed, edited and printed. Prints are then rushed to all TV stations in the area, usually on the same day the event has taken place. The batting average of acceptance of such films by the television stations runs very high.

Films Promote Safety

Special film projects are undertaken whenever a specific need arises. For example, it was noted that the British had been having trouble with their Comet aircraft due to explosive decompression, a dangerous phenomenon which can cause a plane to explode in mid-air as the result of something as slight as a scratch on a window pane. In order to guard against this occurring with Lockheed planes, the unit made a film at the request of the Quality Assurance Branch to emphasize to Lockheed employees the necessity for each one to exercise extreme care in doing his particular job.

When the Air Defense Command was conducting its campaign to recruit volunteers into the Ground Observers Corps an appeal was made to the aircraft companies to help indoctrinate the public as to the urgency of this recruiting need. The Lockheed Motion Picture Unit in cooperation with the Marketing Branch responded by producing "Guardians All," a major production which took many months to complete and involved shooting in many Southern California locations. Both in its full-length and TV versions the film was very well received and helped considerably to spur recruiting.

Drama In Each Assignment

Not all motion picture drama takes place on the sound stages and studio back lots of Hollywood and other film production centers, as any Lockheed cameraman will testify. Each assignment at the California Division Motion Picture Unit is a drama-packed production in itself that demands of the photographer as much imagination, creativity and daring as any of today's wide-screen spectacles. ■

Used with real or artificial fog, fog filters are useful to enhance the visual effect of fog—especially in the foreground where real fog usually thins out.

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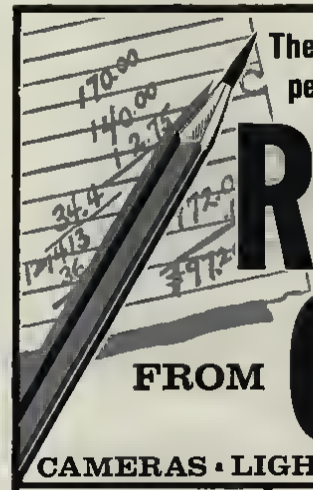

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TECHNIQUES OF CREATIVE FILM EDITING

Continued from Page 95

print with a grease pencil all the transitional optical effects that will be required between sequences. These markings should show during screening. As the work print is projected, notes should be made of all rough-looking cuts, overly-long scenes, and awkward transitions. Also, during this or a subsequent screening, the narration script should be read against the picture, or the narration track, if already recorded, played back with the picture. At this time, the editor should decide which scenes or sequences should be shortened and where any additional shots are needed to smooth continuity.

In a nutshell—cut, view, re-cut and re-view until satisfied or until you can say "This is it!"

Judgment in Creative Editing

It is but natural to assume that if editing is one of the most vital processes in the construction of a motion picture, the editor must be a highly skilled and creative person. The question is often asked: "Where does one go to school to learn how to become a skilled and creative film editor?" There is but one school where the art and science of film editing can really be learned—the school of *experience*. Invariably, editing competence is the result of cutting thousands of feet of film, of applying available basic techniques and the refinements that result from trial-and-error procedure.

A film editor invariably is called upon to make a wide range of decisions: He must judge what footage is good and what is bad; he must choose between all the possible ways of arranging the shots in sequence; he must select the most appropriate cutting point at every scene change; and he must objectively evaluate his decisions in view of the total film and revise his work so that the parts have the correct proportion to the whole.

The basis for the editor's creative decisions is the whole art of film-making. While the choices in every case are intimately related to the peculiarities of the film under construction, still, some rough generalizations are possible concerning the way judgements are made in creative editing. Also, some handy rules-of-thumb for typical situations can be suggested.

Judging Good and Bad Footage

Throw out the obviously unusuable footage first if it is technically bad or doesn't show what it is supposed to show.

When several takes of a scene are available for comparison, compare them *technically* for exposure, composition, steadiness and focus; *content-wise*, for naturalness of expression, economy of action, favorableness of viewpoint, and for continuity with surrounding scenes.

When judgment involves sync sound, choose between the sound takes on the basis of best pronunciation, emphasis, and rate of delivery. Then check the photography on the best sound takes.

Sequence Arrangement

In choosing the arrangement of shots in sequence, aim to orient the viewer (or audience) regarding the subject or its environment. Here, the following

---

What kind of stronge mon-beast is a film editor?

We don t think he can be stereotyped. Each one has his own method of working and his own idiosyncrosias. All have something in common—the good ones, at least. Invariahly they are potiant, creative persons with an eya for seamingly minute detail. Beyond this they have an insight and feeling for film movement, which gives direction to the pattern of cutting-and-splicing, cutting-and-splicing.

---

cutting procedures are recommended:

For straightforward story telling: LS-MS-CU-LS.

For slow pace, gradually increasing interest: LS-MS-MCU-CU.

For fast pace, excitement, shock: LS-CU.

For suspense, drama: CU-CU-CU-LS.

To preserve a sense of reality, match action carefully and maintain screen direction (exit left, enter right, etc.). Use cut-aways or reaction shots to bridge jumps in the action.

Good cutting anticipates the viewer's expectations; so show him the next thing he expects to see. Is it the chain of events or the actor's reaction? After action, show reaction, and vice versa. Give a hint, or artistic preparation, or unusual things to come. For drama, increase the emotional load by holding back the view of the inevitable.

When cutting dialog scenes, use closeups when important sentences are spoken. Use medium shots generally, thus saving closeups for emphasis. Show the listener when his reaction is important.

Selecting the Cutting Point

With matched action:

Cut on irrelevant but eye-catching movement.

Show whole action without cutting if it is significant.

Cut to the better viewpoint just before an action occurs.

Have actions and cuts evenly spaced for a rhythm of occurrences which maintains the viewer's interest.

With dialogue:

Cut in the pause between sentences or ideas.

Cut in the middle of a sentence to show a reaction.

Lead the conversation, show the person before he talks.

Cut late for interruptions.

Cut sentences tight to quicken pace, loose to slow the pace.

With narration:

When picture and narration are closely related, start narration after picture appears.

Start narration immediately (6-8 frames after picture) for fast pace.

Hold narration back (20-30 frames after picture) for leisurely pace.

If scene is unusual, describe it immediately.

If picture and narration are loosely related, start picture well after the narration.

For a change of subject, allow plenty of old and new picture between sentences to close one idea and establish the next.

Where optical effects and a subject-change occur together, make sure narration is finished before the effect occurs, and start new sentence only after picture is again clear.

Where optical effects are used with two scenes related to a given subject, tighten the narration to the edge of the effect; or, preferably, let the narration run completely over the effect.

When cutting between sentences concerned with the same subject, determine the proper pause from previous sentence breaks. Start the new picture about two-thirds through the pause. That is, allow about twice as much

time for the old picture to finish as for the new picture to start.

When introducing a surprise, let the cut to the picture coincide with the start of the key word.

Re-evaluating The Total Film

Following the initial editing of the first rough-cut of a picture, the next step is to review it carefully and look for opportunities to improve it. Here are four important points to consider.

Is the rate of presentation of each sequence appropriate to the surrounding sequences, and to its location in the first film? If not, the long, slow sequences will need tightening.

Is the emphasis placed on a given sequence (by unusual photography or editing) appropriate to the attention the subject or sequence deserves? If not, the striking sequences must be shortened or the unusual scenes removed.

Is the style of editing consistently appropriate to the subject matter? If not, the off-beat sequences must be re-edited in a more sympathetic style.

Is the film too long for a given task or a given budget, or does it present the subject too hastily? If so, it must be re-edited extensively. It is better to have the film too long at first, because it can be shortened more easily than it can be lengthened.

As the reader may gather from the foregoing, there is—as stated earlier—a lot more to editing a motion picture than splicing scenes together in sequence. The truly creative editor doesn't become proficient at his trade through theory. He achieves proficiency by working with film, although theory and reading up on film techniques are good starting points. Film editing calls for making hundreds of decisions with confidence. Not all may be the right decisions, for even the best and most experienced editors will make an occasional mistake. Indeed, there probably is not a film editor in the industry who doesn't learn something new with each new film he cuts. ■

(To be continued)

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Continued from Page R1

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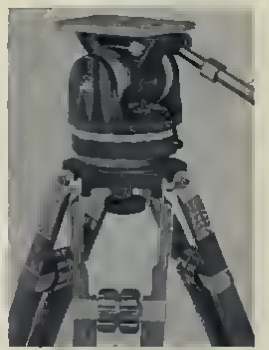

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Limelight's awards are result of nation-wide poll of daily newspaper film critics, who also cited "The Alamo," "Inherit The Wind," "Exodus," "Elmer Gantry," and "Sons and Lovers" as Best Motion Pictures of the year.

ASC's ANNUAL OPEN HOUSE—Members and wives gathered at the Society's clubhouse January 14th for a festive evening. Event is the one gala affair each year to which members' wives are invited. Camera-glimpsed in photos above: 1) Eddie Fleischer, Lee Garmes, and Stanley Cortez in an interesting conversation with an unidentified visitor 2) William Skall (left) telling one of his funny stories to Arthur Miller 3) Making their selections at buffet table are, from left, Mrs. Victor Milner (just visible) Mrs. Arthur Miller, and Ray Fernstrom. Waitress (far right) aids them in their selections 4) Lewis Mansfield—newest ASC Associate Member—and his pretty wife partake of buffet tidbits, while Arthur Feindel (far left) looks on. (Photos Minoxed by Walter Strenge, ASC.)

The new year augurs well for cinematographers in Hollywood, with studio activity already at an accelerated pace TV film production, especially, is in high gear. In a survey conducted by the industry trade paper *Hollywood Reporter*, almost 200 new TV pilots were set for 1961-62 as of January 25th Screen Gems is swinging into full vidpix production and had eighteen segments of various series before the camera in mid-January.

The stepped-up activity was further reflected in increased business being done by Hollywood film laboratories. An IATSE report, made public January 12th. indicated most labs are presently operating two shifts, with Technicolor moving into a three-shift operation. Processing of TV films is at all-time high. ■

SOUND DUBBING METHOD

Continued from Page 101

tor be used to drive the camera and also the projector. When using this method, consistently good results are achieved where the lip sync sequences are placed within the first 200 to 300 feet of the film.

A pair of film rewinds of good quality to hold the tape spools, and a tape splicer round out the complement of equipment necessary to put together the sound track on tape. A typical setup is shown in figure 1.

The steps in producing a finished magnetic sound film by this method are as follows:

Step 1 Preparation of the Picture.

The picture is edited in the usual manner. If sound is to be added to the original picture film instead of a dupe of the original, it is advisable when shooting to use 16mm single-perforated film, winding B, so that a full width (100 mils) magnetic track may be added. The use of the 100 mil track will insure the best fidelity and signal-to-noise ratio of the finished sound-on-film recording. Although the picture may be edited basically around the visual materials on hand it is well to take into account the length and appropriateness of the various voice recordings at this point for later matching to the picture. The edited film is then sent to the lab for the application of the magnetic sound stripe.

Step 2 Preparation of the Cue Tape.

The cue tape is a reel of ¼-inch

Continued on Page 124

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SOUND DUBBING METHOD

Continued from Page 122

magnetic recording tape on which the start of each important scene is accurately timed and marked to run synchronously with the picture. There are two ways to prepare this tape, the choice depends upon the accuracy of timing required. From a practical standpoint this depends solely upon whether lip sync sequences are included or not. The most accurate method will be outlined first.

The edited picture film (with sound stripe applied but not recorded) is threaded through the magnetic sound projector. A magnetic sync mark is recorded well in advance of the picture start by pressing the *record* button on the projector with the film stationary (the projector motor running but declutched in the case of the B & H 302) This action will record a noticeable click on the magnetic sound track of the picture when the track is played back. Care should be taken to determine if the click results from the recording head or the erase head so that timing compensation can be made if required For convenience a mark is also made on the picture leader at point of the aperture in the projector to denote the starting point.

Next, clicks are similarly recorded on the soundtrack to mark the start of each scene or sequence of the picture requiring an accurate sync mark. The sync start click and all other sync clicks are then re-recorded *from the film sound track to the cue tape* Identification of the recorded sync marks on the tape is achieved by recording by voice the name or number of the scene on the tape while the sync marks are being recorded. The recorded cue tape marks are then located and marked by pen and ink along with the name of the scene or sequence to which they belong

A short cut method for magnetically marking the cue tape when no lip sync is involved is to perform the entire above operation by voice After establishing a picture sync mark on the leader and a click on the tape, the tape recorder is started manually from that position the instant the projected picture sync mark flashes on the screen. The start of each scene is identified on the tape quickly saying "mark" as the scene flashes on, and by stating the name of the scene. The marks on the tape are then located and marked with a pen as previously described This method, which is far quicker and easier, yields very satisfactory timing for pre-recorded music and commentary. Obviously, the two methods can be combined when it is desired to synchronize very accurately a relatively few lip sync sequences.

Step 3. Preparation of the Sound Track Tape

The final "sound track" tape is prepared by cutting and splicing together the music, sound effects, pre-recorded commentary, and/or lip sync tapes with blank tape where required to match the cue tape. An easy, fool-proof method of synchronizing the two tapes is to wind them together on a common spool, as shown in figure 1. Care must be taken not to confuse the two tapes and cut the cue tape by mistake! The risk of doing so can be minimized by using tapes of different colors This will also insure that the cue tape and the sound track tape are kept in the same relative positions, one over the other, on the common takeup reel. The use of Mylar-base tape is also recommended because of its superior strength, which makes it virtually unbreakable, thus reducing or eliminating the time lost in repairing tape breaks

Step 4 Final Recording.

At the final recording session, when the taped sound is to be combined with the live sound

(a) the tape recorder and the projector are started simultaneously from their respective sync marks, or

(b) the tape recorder is started after the projector when the picture sync mark appears on the screen.

Method (a) is recommended for lip sync work. Both the Roberts recorder and the Bell & Howell projector have a clutch which may be used for synchronous starts. Obviously the method used in the final recording must be the same as is used in preparing the cue tape.

The method of adding music and pre-recorded commentary to live commentary described in this article was used very successfully during the recent production of a 700-foot film covering the important events during a week-long family reunion. It was desirable to use the voices of many members of the family who could not be present at the final recording session to provide general commentary

and narration for the film, and to describe the many exhibits of family memorabilia. The sequences requiring commentary were usually filmed with the individual who was to supply the commentary looking on. Their remarks were then tape-recorded with no particular emphasis placed on exact timing.

Although most of these individuals had no previous microphone experience the commentary thus obtained was extremely natural with no evidence of stress, as would have been the case if the recording had been made at the same time as the picture, with pressure to "get it right the first time." These taped sequences, usually longer than necessary, were later cut to match a cue tape prepared as described above. Music tapes were intercut with these and the entire "sound track" tape was re-recorded on the magnetic track of the edited picture film and mixed, where appropriate, with live commentary. Exact timing of the pre-recorded commentary was obtained by cutting out words, phrases, or sentences as necessary. The resulting sound track had the over-all effect of an extremely natural, well-timed professional commentary, which greatly enhanced the value of this film. ■

PHOTOGRAPHIC ASSIGNMENTS

Continued from Page 62

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PARAMOUNT SUNSET STUDIOS

FLEET SOUTHCOTT, "Gunsmoke"* with James Arness and Deanna Weaver.

LESTER SHORR, ASC, "Pete and Gladys"* (El Camino Prods.) with Harry Morgan and Cara Williams.

REPUBLIC STUDIOS

WILFRID CLINE, ASC, "Stagecoach West"** (Four Star Prods.) with Wayne Rogers and Richard Eyer.

HARRY WILD, ASC, "Peter Loves Mary"* (Four Star Prods.) with Peter Lind Hayes and Mary Healy. "The Tom Ewell Show"* (Four Star Prods.) with Tom Ewell and Marilyn Erskine.

GILBERT WARRENTON, ASC, "Michael Shayne"* (Four Star Prods.) with Richard Denning.

CHARLES BURKE, "Dante"* (Four Star Prods.) with Howard Duff and Alan Mowbray.

GEORGE DISKANT, ASC, "June Allyson Show"* (Four Star Prods.) with June Allyson.

JOSEPH MACDONALD, ASC, "The Last Time I Saw Archie" (Mark VII Prod. for UA) with Robert Mitchum and Jack Webb. Jack Webb, director.

GEORGE DISKANT, ASC, "June Allyson Show"* (Four Star Prods.) with June Allyson; "The Law and Mr. Jones"* (Four Star Prods.) with James Whitmore.

KIT CARSON, "Wanted Dead or Alive"* (Four Star Prods.) with Steve McQueen; "Dick Powell's Zane Grey Theatre"* (Four Star Prods.) with Dick Powell.

CARL GUTHRIE, ASC, "Michael Shayne"* (Four Star Prods.) with Richard Dennings.

REVUE STUDIOS

MACK STENGLER, ASC, "Leave It to Beaver"* (Comalco Prods.) with Barbara Billingsley and Hugh Beaumont. Norman Tokar, director.

ROBERT GOUGH, "The Deputy"* (Revue Prod.) with Henry Fonda.

WALTER STRENGE, ASC, "Wagon Train"* (Revue Prods.) with Robert Horton.

RAY RENNAHAN, ASC, "Laramie"* (Revue Prods.).

JACK MACKENZIE, ASC, "Bringing Up Buddy"* (Kyro Prods.) with Emil Markey and Dora Morenda.

JOHN RUSSELL, ASC, NEAL BECKNER, "Alfred Hitchcock Presents"* (Revue Prods.).

BENJ. KLINE, ASC, JOHN RUSSELL, ASC, LIONEL LINDON, ASC, "Thriller"* (Revue Prods.)

JOHN RUSSELL, ASC, LIONEL LINDON, ASC, "Checkmate"* (J&M Prods.) with Anthony George.

JOHN WARREN, ASC, "Wells Fargo"* (Overland Prods.) with Dale Robertson.

JOHN RUSSELL, ASC, "Tall Man"* (Revue Prods.) with Barry Sullivan.

ELLIS THACKERY, ASC, "Westinghouse Playhouse"* (Revue Prods.).

CLIFF STINE, ASC, "Posse from Hell" (Color) with Audie Murphy and John Saxon. Herbert Coleman, director.

JOHN WARREN, ASC, JACK MACKENZIE, ASC, BENJ. KLINE, ASC, "Shotgun Slade"* (Revue Prods.)

NEAL BECKNER, EMIL HARRIS, "Bachelor Father"* (Bachelor Prods.) with John Forsythe.

JOHN WARREN, ASC, ELLIS THACKERY, ASC, "Tall Man"* (Revue Prods.) with Barry Sullivan.

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REVUE STUDIOS

ELLIS THACKERY, ASC, JOHN WARREN, ASC, "General Electric Theatre"* (Revue Prods.)

CLIFFORD STINE, ASC, "Tammy, Tell Me True" (Color, Ross Hunter Prod.) with Sandra Dee and John Gavin Harry Keller, director

ARTHUR E. ARLING, ASC, "Lover, Come Back" (UI-7 Picts.—Nob Hill-Arwin) with Rock Hudson and Doris Day Delbert Mann, director

TWENTIETH CENTURY-FOX

ROBERT HAUSER, PHILIP LATHROP, ASC. "Hong Kong"* with Rod Taylor and Lloyd Bochner

LLOYD AHERN, ASC, "Adventures in Paradise"* with Gardner McKay and Weaver Levy

PIETRO PORTALUPI, ASC, "Francis of Assisi" (CinemaScope & Color, Triton Pict. Corp., shooting in Europe) with Brad Dillman and Stuart Whitman.

WILLIAM MELLOR, ASC, "Wild in the Country" (CinemaScope & Color, Co. of Artists Prod.) with Elvis Presley and Hope Lange Philip Dunne, director

LEO TOVER, ASC, "All Hands on Deck" (CinemaScope) with Pat Boone and Barbara Eden Norman Taurog, director.

OTTO HELLER, "The Big Show" (CinemaScope & Color, API, shooting in Germany) with Esther Williams and Cliff Robertson. James B. Clark, director

CHARLES CLARKE, ASC, "Return to Peyton Place" (Company of Artists, CinemaScope & DeLuxe Color) with Joan Crawford and Carol Lynley Jose Ferrer, director

ELLIS CARTER, ASC, "Pirates of Tortuga" (Clover Prod.) with Ken Scott and Letecia Roman Robert Webb, director.

LEON SHAMROY, ASC, "Snow White and the Three Stooges" (CinemaScope & Color) with Carolyn Heiss and the Three Stooges Walter Lang, director

KAY NORTON, "The Silent Call" (CinemaScope, API) with Gail Russell and David McLean.

WARNER BROS.

LUCIEN BALLARD, ASC, "Susan Slade" (Shooting in Monterey) with Troy Donahue and Connie Stevens. Delmer Daves director

HARRY WAXMAN, "The Roman Spring of Mrs. Stone" (Color; AA Prod.; shooting in London) with Vivian Leigh and Warren Beatty Joe Quintero, director

EUGENE POLITO, "Portrait of a Mobster" with Vic Morrow and Leslie Parrish Joseph Pevney, director

RALPH WOOLSEY, ASC, "Claudelle Inglish" with Diane McBain and Arthur Kennedy Gordon Douglas, director

RAY FERNSTROM, ASC, BYRON BAKER, "Cheyenne"* with Clint Walker

CARL BERGER, ASC, WILLARD VANDERVEER, LEWIS JENNINGS, JACK MARQUETTE, "Maverick"* with Jack Kelley and Roger Moore

JACK MACKENZIE, ASC, EDWIN DUPAR, ASC., ROBERT HOFFMAN, "Surfside 6"* with Troy Donahue and Diane McBain

HAROLD STINE, ASC, J. PEVERELL MARLEY, ASC, "Roaring Twenties"* with Rex Reason.

HAROLD STINE, ASC. BURT GLENNON, "Lawman"* with John Russell

RAY FERNSTROM, ASC., ROBERT TOBEY, ASC., BERT GLENNON, HAROLD STINE, ASC. GLEN MACWILLIAMS, ASC. "77 Sunset Strip"* with Efrem Zimbalist, Jr.

EDWIN DUPAR, ASC., GLEN MACWILLIAMS, ASC., ROBERT HOFFMAN, "Hawaiian Eye"* with Anthony Eisley and Robert Conrad

BERT GLENNON, JACK MARQUETTE, "Room for One More"*

MARK DAVIS, ASC. Commercials.* (Film ways Inc.) ■

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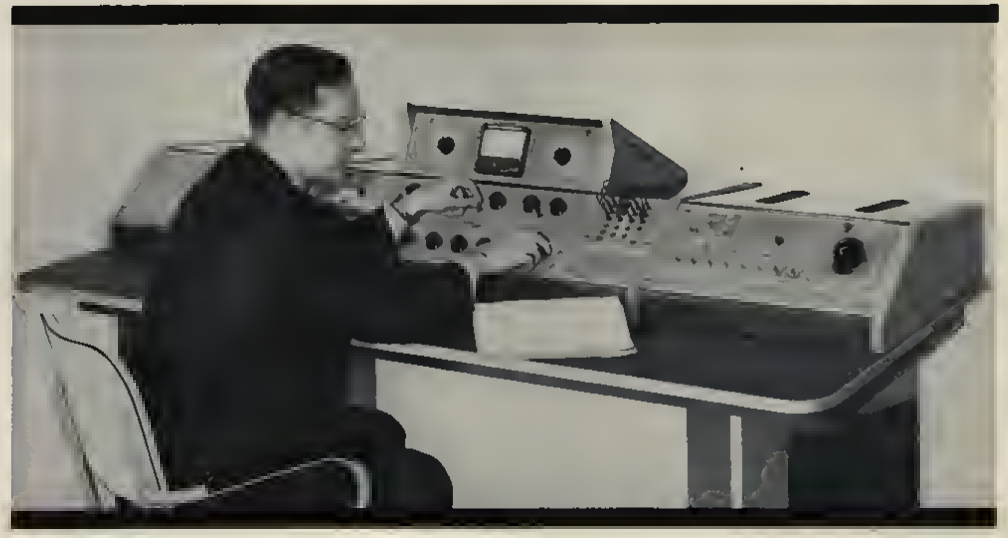

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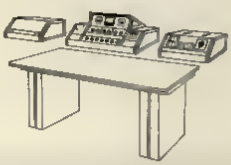

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